

PRELIMINARY AIRPORT MASTER PLANNING
FOR THE MONTEREY PENINSULA
AIRPORT DISTRICT

Gordon Thomas Reed

Library
Naval Postgraduate School
Monterey, California 93940

NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

PRELIMINARY AIRPORT MASTER PLANNING FOR THE
MONTEREY PENINSULA AIRPORT DISTRICT

by

GORDON T. REED

Thesis Advisor:

M. G. Sovereign

March 1973

Approved for public release; distribution unlimited.

T153554

Preliminary Airport Master Planning for the
Monterey Peninsula Airport District

by

Gordon Thomas Reed
Lieutenant, United States Navy
B.S., Northwestern University, 1966

Submitted in partial fulfillment of the
requirements for the degree of

Master of Science in Operations Research

from the

Naval Postgraduate School
March 1973

ABSTRACT

The thesis presents a systematic preliminary airport master planning process for the Monterey Peninsula Airport District. Federal Aviation Administration airport master planning is explained and examined. The history, current operations and organizations of the Monterey Peninsula Airport District are examined through research and personal interviews. Specific problems are identified along with the factors that must be evaluated to solve these problems. Specific recommendations for further projects are listed in detail.

ACKNOWLEDGEMENTS

In the compilation of the many facts and opinions in this thesis the cooperation of many people was involved. I wish to thank all the airport tenants, concessionaires and individual employees who willingly gave of their time and information. I wish to thank the Board Members, especially Mr. Richard Tourangeau who initiated the project, for their cooperation and backing. Lastly, I wish to thank the Airport Manager, Mr. Nick Ford, and his staff for their cooperation during an especially busy and demanding time in the Monterey Peninsula Airport District's history. My hopes are that this project will significantly aid the Monterey Peninsula Airport District in the development of a comprehensive and appropriate Master Plan and will also serve to utilize the talents and training of the students of the Naval Postgraduate School's Operations Research and Administrative Sciences Department.

TABLE OF CONTENTS

I.	INTRODUCTION	5
II.	AIRPORT MASTER PLANNING	9
III.	MONTEREY PENINSULA AIRPORT DISTRICT HISTORY	15
IV.	CURRENT MONTEREY PENINSULA AIRPORT DISTRICT OPERATIONS	19
V.	MONTEREY PENINSULA AIRPORT DISTRICT ORGANIZATION	25
VI.	INTERVIEWS WITH MONTEREY PENINSULA AIRPORT DISTRICT TENANTS, CONCESSIONAIRES AND MANAGEMENT DEPARTMENTS	28
VII.	INTERVIEWS WITH MONTEREY PENINSULA AIRPORT DISTRICT BOARD MEMBERS AND MANAGEMENT	40
VIII.	PRELIMINARY ANALYSIS	49
IX.	NAVAL POSTGRADUATE SCHOOL STUDENT PROJECTS	62
APPENDIX A	MONTEREY PENINSULA AIRPORT DISTRICT REVENUE AND EXPENSES	70
APPENDIX B	MONTEREY PENINSULA AIRPORT DISTRICT AIRLINE SCHEDULES	71
APPENDIX C	MONTEREY PENINSULA AIRPORT DISTRICT AIRLINE PASSENGER DATA	72
APPENDIX D	MONTEREY PENINSULA AIRPORT DISTRICT KEY OPERATIONAL PERSONNEL	73
APPENDIX E	MONTEREY PENINSULA AIRPORT DISTRICT CITIZEN'S ADVISORY GROUP	75
APPENDIX F	MONTEREY PENINSULA AIRPORT DISTRICT NORTH SIDE BUSINESS ESTABLISHMENTS	77
LIST OF REFERENCES	78	
INITIAL DISTRIBUTION LIST	79	
FORM DD 1473	80	

I. INTRODUCTION

This thesis was the extension of a project completed in the Operations Analysis course, Methods and Principles of Systems Analysis (Cost) taught by Associate Professor M. G. Sovereign of the Naval Postgraduate School. This initial project was instigated at the request of Mr. Richard Tourangeau, a member of the Monterey Peninsula Airport District Board, through the Operations Research and Administrative Sciences Department Chairman, Dr. Jack Borsting. Mr. Tourangeau's request was whether the school could develop parts of or possibly a complete master plan for the Monterey Peninsula Airport District. The initial project was entitled "Recommendations and Suggestions for Areas of Study for a Master Plan for Monterey Peninsula Airport District." The project utilized the Federal Aviation Administration's Advisory Circular (AC 150/5070-6) entitled "Airport Master Plans" and applied this to specific major problem areas at the Monterey Peninsula Airport. Due to time limitations this initial project was of a cursory nature.

The thesis utilizes some portions of the initial project and probes them in greater detail. In addition more background and developmental information is included to allow the reader a more complete understanding of the past and present operation at the airport. This will allow an airport consultant or a graduate student to view the airport as a complete system with multiple interacting problems rather than individual minor problems viewed and solved in isolation. Another section of the thesis attempts to structure the decision-making process for the Airport Board. It points out the appropriate data inputs, the alternative solutions and the value judgements that must be made to arrive at the best possible

solution. One of the other sections identifies some of the specific problem areas at the airport that Operations Research students are capable and trained to analyze. With this identification of specific projects and the appropriate organizational structure between the Operations Research and Administrative Science Department and the Board and operators of the Monterey Peninsula Airport, the students will have a chance to practically apply their training as well as benefit the Monterey Peninsula Airport District by a professional contribution to their master plan.

For those wondering what operations research or systems analysis is, a good broad definition was given in a Rand publication entitled Program Budgeting by David Novick. In this publication systems analysis was defined as "a systematic approach to helping a decision maker choose a course of action by investigating his full problem, searching out objectives and alternatives, and comparing them in light of their consequences to bring expert judgment and intuition to bear on the problem."

Specifically Operations Research students at the Naval Postgraduate School are trained in probability theory, data analysis, linear and non-linear programming, micro and macro economics, computer languages and computer simulation using the IBM 360/67. During the latter part of the two-year masters degree program the students are required to complete several analytic projects and complete a thesis. In addition during the fifth quarter most students participate in what is called an "experience tour" which is a period of six weeks during which the student works with various military, public or industrial groups on operations research/systems analysis projects. Some of these experience tours have been in the local area. During this period the student attends no classes. This would be an ideal time to interest a student in an experience tour at the

Monterey Airport working possibly independently or with a consultant for supervision. Either way would be a valuable experience.

To allay any fears of a built-in bias by a military officer toward, for example, unlimited expansion or even strict environmental conservation, it can be said that there are as many different opinions as there are students and professors at this institution. The operations research training is not in the use of intuition or the pursuit of personal preference; but in the collection, ordering and analysis of the appropriate facts and data upon which a sound, feasible and hopefully optimal decision can be made. Our analytic tools are designed to be, within certain assumption limitations, as objective as possible. We do not per se favor one particular alternative over another. It is our job to order the facts and identify the alternatives. Others with the appropriate experience should select the best alternative based upon their appropriate value system. In other words the Monterey Peninsula Airport District Board would be responsible for the selection of particular projects and the choosing of a certain alternative from a group of possible alternatives based partially upon the preferences of the public. In general the Board will be responsible for the basic direction of the master plan.

The information contained in this thesis is information which will be useful to the Airport Board, to students working on projects for the Board and as a first step toward an airport master plan whether it be done eventually by an engineering or airport consulting firm, by an independent consultant, by Naval Postgraduate School students, or by some combination of these. In order to make the thesis useful to all parties, the operations research professional jargon was kept to a minimum except where specifically necessary to describe some technique

applicable to a particular project. Some of the material included will probably be first-hand knowledge to some readers, but it was all included in hopes of informing those without the experience in that particular area.

My approach has been that of viewing all of the operations of the airport in brevity rather than several isolated operations in depth. Interviews have been held with all the Board members, the airport manager and most of his staff, most tenants and all concessionaires. Any tenant of a temporary nature, for example on a short term lease, was not interviewed.

II. AIRPORT MASTER PLANNING

It is important to fully understand what is meant by the term "airport master plan." The Federal Aviation Administration's Advisory Circular (AC 150/5070-6) entitled "Airport Master Plans" defines and provides guidance for the preparation of airport master plans as provided for by the Airport and Airways Developmental Act of 1970. An airport master plan is a written study applied to the modernization or expansion of existing airports and to the construction of new airports.

Specifically the master plan:

1. Provides an effective graphic presentation of the proposed development of the airport and of anticipated land uses adjacent to the airport for a specified period of time.
2. Establishes a schedule of priorities and phasing for the various proposals in the plan.
3. Presents pertinent back up information and data essential to the development of the plan.
4. Describes the various concepts and alternatives considered in the establishment of the plan.
5. Provides a concise and descriptive report so that its recommendations can be clearly understood by the community and by those authorities and public agencies which will approve, promote and fund the proposed improvements.

The airport master plan is used not only to delineate the planned development to local authorities and local public agencies but Federal agencies as well. Under the Airport and Airways Development Act of 1970 a funding program called the Airport Development Aid Program (ADAP), under the jurisdiction of the Federal Aviation Administration (FAA), was set up to distribute matching funds for specific air transportation projects. Funding was from a trust fund financed by aviation user charges. The

specific airport master plan is one of the bases for funding a project at a particular airport.

Many groups with at times conflicting interests must be involved with the master plan. The private citizen, community organizations, airport users, area-wide planning agencies, conservation groups, ground transit officials and aviation and airport concessionaires must be consulted during the development of the plan. The purpose of this is two-fold; first, to pave the way for acceptance of the plan, and secondly, to provide valuable inputs for the general direction of the plan. The planning efforts will be required in varying degrees from economists; financiers; architects; civil, mechanical, electrical and traffic engineers; pilots; air traffic controllers; airline and concessionaire advisers; airport managers; environmentalists; ecologists; and urban planners. These efforts must be carefully coordinated in both study efforts and costs of various master plan elements. This coordination is in fact one of the more important factors in the master plan. It provides the direction and the eventual success of the total plan. A system for the coordination is proposed in this thesis.

An airport master plan is composed of four general phases:

Phase I: Airport Requirements

Phase II: Site Selection

Phase III: Airport Plans

Phase IV: Financial Plans

The Airport Requirements Phase consists of an inventory of all data pertinent to the geographical area to be served by the airport. This includes data on airport facilities, area planning efforts and historical information. Next in this phase is a forecast of aviation demand. These forecasts should be short, intermediate and long-range

forecasts of based aircraft, aircraft mix, aircraft operations, enplaned passengers, air cargo and airport access data. A demand and capacity analysis including cost and benefit analyses should be made using the aviation forecasts. From this demand and capacity analysis the requirements for facilities can be determined. Such items as length and number of runways required, size of terminal building required, types of access roads required, etc. can be determined. This analysis is unconstrained. There is at this level no consideration of financial, geographical or design limitations. Last in this phase is an environmental study. The FAA recommends that qualified experts perform this study to insure airport compatibility with the environment.

The next phase in the airport master plan is the Site Selection Phase. Since the Monterey Airport site has already been selected and developed, this phase is unnecessary. The only circumstance when this would be necessary is if it appeared that based upon the forecasting of Phase I that the total capacity of the improved airport would be unable to completely service all passengers demanding air transportation. In this circumstance an additional "reliever" airport would be necessary. Another plausible alternative would be closing the existing airport and developing a new adequate airport at another site. A third possible alternative would be shifting the passenger demand to other types of transportation.

After the facility requirements have been established, the master plan process enters Phase III: Airport Plans. The first element of this phase is developing the airport layout plan. Figure 1 is Monterey Peninsula Airport's 1968 layout plan. A layout plan is usually an engineering drawing depicting runway and taxiway layout, aprons and terminal areas,

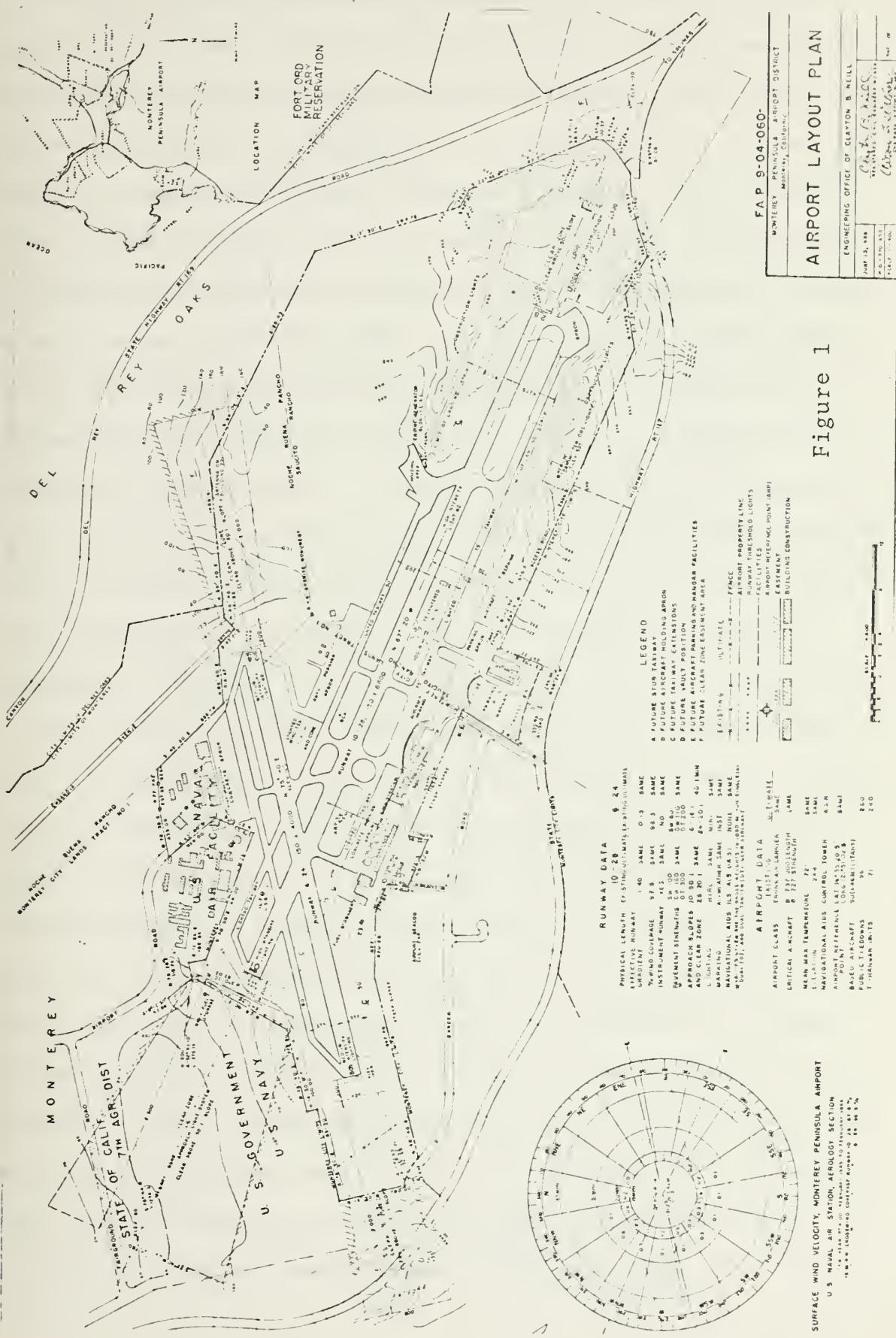


Figure 1

air navigation facilities and runway approach zones, wind data and the general physical layout of the airport. A land use plan for land inside and outside the airport boundaries should be included in this phase. The land use plan inside the boundaries will set aside areas for the terminal complex, maintenance facilities, buildings, industrial sites, airport access, approach and clear zones, recreation sites, etc. Land use outside the airport boundary should be governed by obstruction clearance criteria and noise exposure forecasts (NEF). These two plans, the airport layout plan and the land use plan, determine the terminal area plans. The terminal area plans should at this point be limited to only conceptual drawings and concept studies. The last element of the Airport Plans Phase is the airport access plan. The airport access plan should propose efficient routings to the central business district or tie-ins to other modes of transportation from the airport. Traffic studies should be undertaken to determine the size of various necessary access facilities.

The last phase in the airport master plan is the Financial Plans Phase. In this phase the schedules and cost estimates of various proposed facilities should be presented. The economic feasibility of the plan should be tested. Does the capital investment produce enough revenue with other sources of revenue to cover annual costs incurred by the capital investment plus administrative, operational and maintenance costs? If the plan is economically feasible the sources of financing must be considered. Can the present sources of revenue cover the new capital costs? Are general obligation bonds, revenue bonds or some form of government assistance available? What is the possibility of matching funds available through the Airport Development Aid Program (ADAP)?

There are various ways to finance the airport master plan. One

way is strictly through airport generated revenue. Another source is the Federal Aviation Administration's Planning Grant Program which provides Federal matching funds for the cost of developing the master plan. The question that is raised is: with the acceptance of these matching funds, is there a commensurate obligation for the implementation of the specific recommendations in the master plan? It is felt that there is no obligation. A project not specifically recommended by the master plan but funded completely from airport revenue would not be subject to Federal approval but would be subject to the Federal Aviation Administration's certification standards. A project not specifically recommended by the master plan but financed by ADAP matching funds would require a specific study to justify the change from the original master plan. Of course, any project recommended by the master plan would need no further study when applying for ADAP funds.

III. MONTEREY PENINSULA AIRPORT DISTRICT HISTORY

Air transportation was in existence on the Monterey Peninsula as early as the late 1920's when Maddox and Western Airlines operated out of a large open grass field. This field was approximately opposite the present Monterey Airport just south of the Monterey-Salinas Highway. In the early 1930's Del Monte Properties made available some land near the Old Del Monte Hotel for a "paved" airfield. Public airport privileges were leased from Del Monte by the cities of Monterey, Pacific Grove and Carmel.

In the middle 1930's improvements were necessary at the airport. In order to qualify for WPA funds the airport had to be owned by a public agency. The 37 acres the airport was located on was therefore deeded to the City of Monterey. With the WPA funds a modern airport was built consisting of a 2300 foot runway, a 1600 foot runway and a hangar.

This facility was called the Monterey Municipal Airport. The City of Monterey was unable to spend further funds for the operation of the airport, so the airport was leased to various private operators. In 1937 Mr. Alton Walker assumed the lease and managed the airport during a period of significant increases in the importance and development of air transportation. The same Mr. Walker, incidently, has recently resigned the Chairmanship of the Monterey Peninsula Airport District Board and is now serving as one of the Directors of the Board.

United Air Lines in 1937 established a regular flight schedule to the Monterey Municipal Airport using its ten-passenger Boeing B-247. After the introduction of the twenty-one passenger Douglas DC-3 United Air Lines needed a longer runway and threatened to terminate service

unless the runway was lengthened. An investment of \$500,000 was necessary for the desired improvements. The airport's management decided to attempt to obtain matching funds provided by the Federal Government for building or expanding airports. The Federal Government would provide \$250,000 for the expansion. In order to raise the other \$250,000 a bond issue was necessary. The Monterey City Council denied the request for the bond issue.

In March 1941 under the leadership of a local attorney, Argyle Campbell, a group of citizens were able to get the necessary legislation (State Senate Bill No. 1300) enacted to form an independent public airport district which would qualify for Federal funds. This it was hoped would legally bypass the Monterey City Council's decision.

The Monterey Peninsula Airport District was organized and the Monterey Airport District Board of Directors was appointed by the County Board of Supervisors. The District consisted of Seaside, Monterey, Del Rey Oaks, Sand City, Pacific Grove, Carmel and the unincorporated Pebble Beach area. The Board was to consist of five publically elected directors serving for terms of four years with two years between elections; two directors seats to be up for election in two years, followed by three seats two years later. Their first official act was to test the legality of the proposed bond issue. After getting the court's approval the Board sold enough bonds to raise the \$250,000 and bought the 500 acres that is now the Monterey Peninsula Airport. Before the Federal matching funds were received, World War II was declared and all grant funds were frozen.

In 1943 a joint agreement was reached with the U.S. Navy for the Monterey Peninsula Airport to be used by the Navy as a support, maintenance and training center for its Pacific Fleet Air Units. The Federal Government finally allocated funds with the Navy spending over \$749,000 and the

Civil Aviation Agency (forerunner of the Federal Aviation Administration) spending almost as much on various facilities. A main runway of 5,000 feet and an auxiliary runway of 4,000 feet was built. The airport was used throughout the war by the Navy until 1945. In 1945 civilian flights that had been discontinued because of the war, were re-established with both United Air Lines and Southwest Air Lines, a forerunner of Hughes Airwest Air Lines, providing service.

In 1947 the Navy began negotiations to purchase the Del Monte Hotel as a "General Line and Postgraduate School." The Monterey Peninsula Airport was needed again as a training facility for students at the Navy School. By 1952 the Navy was given full control of the north side of the field by a long term lease arrangement.

Because of increasing traffic in 1950 a new \$350,000 terminal and parking facilities were necessary. Federal matching funds covered 52% of this cost. In 1956 an instrument landing system was installed by the Federal Government at a cost of \$150,000. A new control tower was built at the cost of \$250,000 in 1961-62. The Federal Government financed 54% of this cost with the rest of the money being raised by a \$.06 per \$100 assessed valuation property tax on the property owners in the Airport District. With the advent of the jet age in the 1960's the present runways were no longer adequate. In 1967-68 two projects, costing about one million dollars, were undertaken. One project extended the 5000 foot runway to 6600 feet and the other project resealed the 4000 foot auxiliary runway.

In early 1972 the Navy Air Facility was discontinued with the north side of the field reverting back to the District. Only a small area is

retained by the Navy and is Federally owned. It houses such facilities as a Navy Aviation Safety School, a dispensary and miscellaneous other facilities.

IV. CURRENT MONTEREY PENINSULA AIRPORT
DISTRICT OPERATIONS

The Monterey Peninsula Airport presently serves a district area population of approximately 90,000 people. There are thirty flights per day by three scheduled airlines; two major airlines, United Air Lines and Hughes Airwest Air Lines; and one commuter airlines, Valley Air Lines. The commercial aircraft using the airport vary in size from the Boeing 727 down to the twin engine Beechcraft. More than 400,000 passengers used the airport for scheduled flights during 1972. There are approximately 113 general aviation aircraft based at the airport: twenty-five are multi-engine and the rest are single engine aircraft. The airport tenants consist of two fixed-based operators, a Federal Aviation Administration facility, a Navy flying club and numerous small businesses. The small businesses are located on the north side of the field in the abandoned Navy buildings. They are all on short term lease which will expire in the summer of 1974. The airport concessionaires consist of three nation-wide car rental agencies, an airport limousine service, an air freight service, a restaurant/bar complex and a gift shop.

In the latter part of 1973 an addition to the passenger terminal will be completed. The \$1.3 million cost of the terminal addition was paid for in part by Federal matching funds and the remainder by revenue generated by airport operations and district property taxes. There was no necessity for a bond issue. The terminal addition was necessary to handle the increased passenger load which has been increasing recently at the rate of about seven percent per year. See Appendix C for past and current passenger data. An additional basis for the terminal addition

was a study done in 1969 by United Air Lines (REF. 7). This study recommended the construction of a new terminal on the north side of the airport across from the current site.

The new addition to the terminal introduces a new terminal passenger flow concept at the airport. The terminal is essentially three buildings next to one another with interconnecting halls. The two outer buildings handle the flow of enplaning passengers and the center building handles the flow of deplaning passengers. The building to the west is the old terminal building and the other two buildings comprise the new terminal addition. The concept initially envisioned was having one major airline in each enplaning building. This would put United Air Lines in the new terminal addition with Airwest Air Lines and Valley Air Lines remaining in the old terminal. There is some indication at present that Airwest wants to also move to the new terminal. Airwest feels that they are losing business to United Air Lines due to their lack of equal exposure. This move is at the negotiating stages at present. The Airport Board in general feels that Airwest's move to the new terminal would only be acceptable if a third major airline was introduced into the airport; airlines having the type of intrastate service that Air California and Pacific Southwest Airlines offer.

The addition to the terminal includes a new airport manager's office, a large office available for lease, more airline counterspace and office space, expanded baggage and freight facilities, new passenger lounges, a stand-up snack bar and a small cocktail lounge. In addition the old terminal area will have an expanded restaurant and bar, better car rental and airport limousine facilities and an upgraded appearance to blend with the new terminal addition. Also, with the new terminal addition there are expanded metered parking facilities.

Scheduled to be completed by March of 1973 is the installation of an air surveillance radar system. The system is being installed by the FAA and will enable the control tower to determine the location of approaching planes by radar rather than depending solely upon pilot position reports. This will prevent most aircraft near misses during an approach and allow more positive control of aircraft movements.

Because of the Navy's termination of their lease on the north side of the field, the Airport District is now responsible for the airport's crash and structural fire protection. Three new fire engines costing about \$108,000 are being obtained. A fire department has been organized, staffed and is in the process of being trained.

The FAA to deal with the potentially disastrous hijacking situation has ruled that all carry-on baggage must be opened and inspected; all passengers must pass through metallic detectors and that sterile zones must be established to segregate inspected passengers from other persons. These functions are all the responsibility of the airlines and not that of the Airport District. A new FAA regulation requires an armed airport security guard at each gate during the inspection and enplaning of passengers. The establishment of this police force is the responsibility of the specific airport in this case the Airport District. Non-compliance with this regulation subjects the airport to a \$1000 fine per violation. The cost of the program so far has been borne by the various municipalities for the municipally owned and operated airports and by the District in the Monterey Peninsula Airport's case. As of this writing there is a bill that has passed the United States Senate and is going to the House of Representatives providing for \$35 million to pay for the anti-hijacking

police forces. Until there is federal funding for these police forces, funding must be on a local individual airport basis.

By the middle of 1973, Monterey Peninsula Airport must meet "certification standards" set by the FAA. Any airport that serves Civil Aeronautics Board certificated scheduled air carriers must meet these certification standards or face the termination of the scheduled air carrier service. These certification standards govern all aspects of the airport operation and are explained in Volume Number X, Part 139 of the Federal Aviation Regulations. The Monterey Peninsula Airport Manager recently spent several months preparing a certification manual which explains most of the operations and existing facilities at the airport.

The airport is physically constrained to basically its present physical size of 504 acres. There are topographical constraints to the east and south, and extensive urban development to the west and north. The only relatively unpopulated area is to the east. This area is an unincorporated area presently zoned agricultural called the Work Ranch. It is felt that the owners and developers of this area will seek single-family residential zoning in the future. The ranch is beneath the predominately used runway (10-28). To the south there is presently a proposal for a major auto center and department store complex called Tarpey Flats. This proposal at present is causing much opposition. Also according to the California State Division of Highways, the conversion of Highway 68 from a two-lane highway to a freeway is at least ten years away. This highway is to the south of the airport and is the major access road between the airport, the urban centers of the Peninsula and also the City of Salinas.

The Airport District operates on revenue generated from landing fees, tenant leases, concession rental fees, property taxes, parking fees and other miscellaneous sources. In the 1973 budget the District Board estimated that the revenue generated would be over \$850,000. The maximum estimated expenses for this same period were less than \$500,000 (See Appendix A). The present leases of the tenants are for the most part based upon a square footage formula; the rate determined by a real estate appraiser. Rental fees of the concessionaires are based upon a flat percentage of gross sales and vary up to a maximum of 10%. Property taxes at present are \$.11 per \$100 of assessed valuation on District property owners.

One of the major pressures felt currently during any major improvement in the airport is the vocal outcry and dissent of the conservationist, environmentalist and ecologist groups in the area. In addition there are vocal individuals and groups who are disturbed by the noise of the landing and take off of the jets. The Monterey Peninsula area is a rare blend of scenic beauty, pleasant climate, relatively little congestion and a relatively convenient geographical location. Many groups wish to preserve this combination and see any development or expansion as a threat to this preservation.

The economy of the Monterey Peninsula is primarily dependent upon two major factors: the tourist industry and the military. Secondary factors are the business sector and the large retirement community located in the area. One of the primary factors, the tourist industry, is highly dependent upon convenience of available air transportation. The military is a more volatile force but one which is not highly dependent upon the convenience of public transportation. Of the secondary factors

business is dependent upon the convenience of air transportation for its economic well being. Retired persons have usually the options of picking any mode of transportation, but rely on air transportation for convenience and emergency needs.

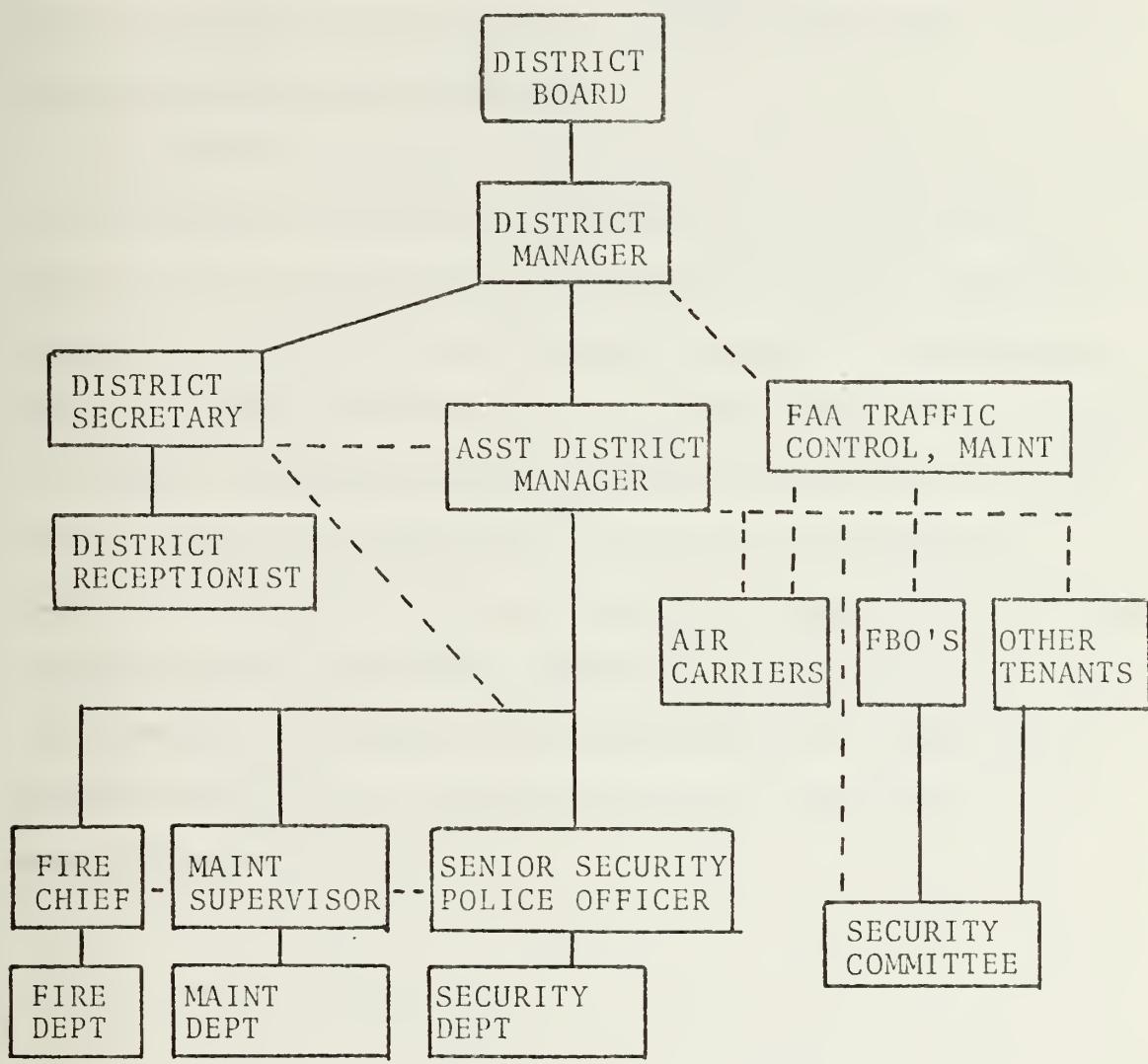
At present at the airport several projects are tentatively being considered for development but are only in the conceptual stages. An example of this is the construction of a maintenance hangar for one of the fixed-base operators. Another proposal under consideration is the extension of the taxiway to the approach end of runway six to make access to the short runway more direct for small aircraft. This would tend to separate small aircraft traffic and large usually commercial aircraft traffic from each other and smooth the traffic flow. Any final action on proposals such as these are being tabled pending the completion of an airport master plan by the summer of 1974.

V. MONTEREY PENINSULA AIRPORT DISTRICT
ORGANIZATION

The Monterey Peninsula Airport District is governed by publicly elected unsalaried officials who compose the Monterey Peninsula Airport District Board. The Board has the power to tax property holders in the District, the power to condemn property, the power to establish a police force, the power to negotiate all leases, and rental fees, the power to pass ordinances governing the operation of the airport, and in general the power to decide policy on any airport concern. Responsible for implementing the Board's policy and managing daily operations is the Airport District Manager. Assisting him are the Assistant Airport District Manager, the District Secretary and the District Receptionist. Responsible to the Airport Manager through the Assistant District Manager are the Fire Department, the Maintenance Department and the Security Department. Working in coordination with the Airport Manager's organization is the Federal Aviation Administration's Traffic Control and Airways Facilities Sector Field offices, the air carriers, the fixed-base operators and miscellaneous other tenants. The fixed-base operators, the Federal Aviation Administration offices, the airlines, the Monterey Air Museum and the Navy Flying Club are represented on the Security Committee, which is headed by the Assistant Airport Manager. This committee which is headed by the Assistant Airport Manager is a Federal Aviation Administration requirement and meets monthly. For a pictorial representation of the organizational structure see Figure 2.

Board decisions are made at monthly scheduled meetings on the first Wednesday of the month. In addition there are miscellaneous other types

MONTEREY PENINSULA AIRPORT DISTRICT
ORGANIZATION CHART



— DIRECT CONTROL

- - - COORDINATION AND LIASON

FIGURE 2

of board meetings; adjourned meetings, study sessions, lease committees and executive sessions. All meetings except the executive sessions are open to the public as is required by law. Results of the executive sessions are announced at the scheduled meetings and usually are concerned with airport personnel and other subjects which might be deemed inappropriate to consider publically.

In mid 1972 when Cessna Aircraft Corporation was attempting to locate a Cessna Citation jet aircraft maintenance facility at the Monterey Airport a group of citizens formed the Citizen's Airport Study Group to oppose the Cessna location. They were successful. Since that time this group has been re-formed into the Citizen's Advisory Group composed of a mixture of citizens both for and against aviation and air transportation. The group is presently chaired by Mr. Kei Nakamura. Appendix E is a list of the total membership. The group interfaces with the Board by written and verbal presentations. At present there seems to be confusion as to whether some of the members are representing particular organizations or whether many of their statements are as private concerned citizens.

VI. INTERVIEWS WITH MONTEREY PENINSULA
AIRPORT DISTRICT TENANTS CONCESSIONAIRES
AND MANAGEMENT DEPARTMENTS

In preparing a master study it is important to be able to identify particular problem areas within the existing facilities. Probably the best way to identify these areas is by personal interviews with the tenants, concessionaires and other people who work with and around these problem areas on a daily basis. It must be realized that any information gathered from these interviews is subject to a double bias. First of all the information is the opinion of the person interviewed and thus is subject to that person's bias or prejudice. Then that information is essentially filtered by the interviewer and tabulated; another bias. What I have attempted to do in this section is give the reader a rather cursory overview of the sub-operations at the airport. Any problem areas that were identified and felt to be especially significant were discussed in a later section of the thesis.

Security Department

Mr. Randy Fuller, the Assistant Airport Manager, is the District Security Officer. He is in charge of the sixteen people in the Security Department. This department was recently created because of the Federal Aviation Administration's order requiring coverage of airport passenger gates during the enplaning of passengers. Retired Monterey Assistant Police Chief, Mr. Robert Trenner, was hired for six months as a security consultant to organize the force. Included on the police force are Mr. Nick Ford, the Airport Manager, who is the Assistant Chief of Police; Mrs. Sherry Bell, the District Secretary, who is a police officer; two

men designated to guard United Air Lines aircraft that remain overnight at Monterey are police officers; and one man who is primarily a meter man and security patrol. The others are full time police officers. Most of the police officers are retired military personnel. Two of the police officers are young police officers from local city police forces. At present there is no retirement or health care program set up. A pressing problem is who is to bear the estimated cost of the police security system of \$40,000 to \$50,000 annually.

Maintenance Department

The Maintenance Department at the Monterey Peninsula Airport is headed by Mr. Shelby Malone. He is responsible to the Assistant Airport Manager. The department is responsible for the maintenance of runway lights, the maintenance of the terminal building except for janitorial services, the maintenance of all airport owned and operated equipment, the painting of signs, the maintenance of the airport perimeter fence and miscellaneous other maintenance duties. The equipment for the most part looks old and run down and is apparently in much need of repair. There are six men in the department. The department is characterized by high turnover and relatively low salaries. The work in general is of a semiskilled nature. There is no retirement or health care program. The employees are usually young and semiskilled or are retired military personnel.

Fire Department

The Fire Department is also responsible to the Assistant Airport Manager. The creation of the department was a result of the Navy's closing of their training facilities on the north side of the field. The Navy had provided structural and crash protection for the District

previously. Now this will be a District function. The District retained the former fire chief, Mr. Don Wright, and hired additional men including some of the former Navy fire personnel who left the Navy and joined the new Fire Department. There are now sixteen men in the fire department. They work sixteen hour shifts every other day and approximately a forty hour week. There are three new fire engines on order from the Yankee Walters Company of Los Angeles, California. These fire engines will cost \$108,000 and will be bought on a lease purchase plan to take advantage of the possibility of increased Federal matching funds at a later date. These new trucks will use "light water," an improved chemical fire-fighting agent, instead of the previously used foam. It will be usable for both structural and crash fires. The Fire Department is governed by the guidelines of the Federal Aviation Administration's Advisory Circular 150/5220-10 and the rules of the National Fire Protection Association. There is presently no health care or retirement program set up in this department.

Federal Aviation Administration

The Federal Aviation Administration is composed of two branches at the Monterey Airport which work in coordination with the Airport Manager; the Airport Traffic Control Branch and the Airways Facilities Sector Field Office. There are written agreements between the District and the FAA on their particular areas of jurisdiction. The Airport Traffic Control Chief is Mr. Leo Yuckert. In addition, there are three assistant chiefs, twelve controllers, one secretary, and one Evaluation, Professionalism and Developmental Specialist. Gross salaries are approximately \$275,000 per year. The Airport Traffic Control Branch is responsible for the safe and controlled movement of any airborne or taxing aircraft

at the airport or for any type of vehicular movement on the runway or taxiways. The other branch of the FAA, the Airways Facilities Sector Field Office is headed by Mr. Harry Wasmundt. He is the Airways Facilities Sector Field Office Supervisor. There are nine technicians in the sector office with gross salaries of \$200,000 annually. They are responsible for the maintenance of Monterey Airport's instrument landing system, the approach light system, the runway and identification lights and the air surveillance radar. In addition this sector office is responsible for airways navigation and surveillance facilities in this Federal Aviation Administration Sector, including such areas as Salinas and Watsonville. An excellent source of air transportation information is through the Federal Aviation Administration, Department of Transportation's automated data program called "F.A.A. Airport Data Base" which is located at the National Flight Data Center in Washington, D. C. Information on this data is available from:

Mr. Carl Hand, Chief Airports Branch
Airport District Office, F.A.A.
839 Mitten Road
Burlingame, California 94010

United Air Lines

One of the major tenants at the airfield is United Air Lines. United Air Lines is a major domestic commercial air carrier serving 113 cities throughout the United States. From Monterey Airport there are three flights to and from Los Angeles and three flights to and from San Francisco daily. See Appendix B for the United Air Lines flight schedule. A total of 574 seats are available per day. Aircraft used are the Boeing 727 and 737. The local operation is managed by Mr. Charles Lovette. There are forty full-time and part-time employees with about ten of the forty being part-time employees. Gross salaries are

approximately \$350,000 annually. Over 300,000 passengers were carried to and from Monterey by United Air Lines in 1972. There was approximately five and one-half million dollars worth of tickets written for departing passengers in 1972 through the Monterey Airport. These tickets are sold at the airport, through seventeen travel agencies and through various military outlets. Recently the landing fee for United Air Lines has been doubled by the District Board to help pay for the new fire department. With United Air Line's move into the new terminal their lease fees have tripled.

United Air Line's scheduling concept is different from what one might suppose. The aircraft are scheduled to depart from the Monterey Airport to only connect with other United Air Line flights in both San Francisco and Los Angeles. The emphasis is upon the flow of passengers into airport hubs that serve the more profitable long range flights; for example, from San Francisco to Chicago or New York. United Air Lines has done several marketing studies which are available locally and from United's San Francisco office. One such study was completed in August of 1968, revised in June of 1969 and recommended the construction of a completely new terminal on the north side of the airport (Ref. 7).

Hughes Airwest Air Lines

The other major airline flying into Monterey Peninsula Airport is Hughes Airwest Air Lines. Airwest also has three departures to and three arrivals from both Los Angeles and San Francisco daily. See Appendix B for the flight schedule. Mr. Fred Hykal is the local manager. There are sixteen full time employees with an annual gross payroll of about \$150,000. Approximately 100,000 passengers were carried in and out of Monterey by Airwest in 1972. Airwest uses Douglas DC-9-10's and

DC-9-30's carrying 178 and 103 passengers respectively. The landing fees of Airwest have also been doubled recently. At present there are negotiations under way for a new lease in the old terminal building or possibly a move to the new terminal building next to the United Air Lines' facilities. There has been a study done on the basic composition of passengers originating at Monterey by Airwest. The study was done for a week in July by Monterey Peninsula College students and consisted of passenger interviews. Attempts were made to determine the percentage of military, business and tourist traffic. The results of this study are available from the Airwest manager.

Airwest Air Lines differs only slightly in scheduling concept from United Air Lines. Since Airwest is a regional airline, not operating east of Salt Lake City, Utah, many passengers originating at Monterey cannot reach their desired destination by continuing out of Los Angeles or San Francisco on Airwest. Therefore many passengers must change to other airlines at San Francisco and Los Angeles. Airwest Air Lines tries to schedule their aircraft so as to connect primarily with their own routes and secondarily with some of the major continental routes.

Valley Air Lines

Valley Air Lines is a commuter airlines that entered service in September of 1972 after another commuter airlines, Golden West Air Lines, terminated service. The aircraft flown are twin-engine Beechcraft carrying eight or nine passengers with a crew of two or three. Afternoon flights include a mini stewardess (under five feet tall). Plans are to replace the present Beechcraft aircraft with the newer Beechcraft King Airs. Valley Air Lines flies between Monterey, Santa Barbara, San Jose, Oakland, Fresno and Bakersfield on all days except Saturday and Sunday

morning. See Appendix B for the flight schedule. There is some air freight service on a space available or guaranteed full passenger fare basis. Valley Air Lines has headquarters at Oakland International Airport. There are two Monterey employees at present. For information on Valley Air Lines Contact:

Mr. Don Kline
General Sales Manager
P.O. Box 2676
Oakland International Airport
Oakland, California 94614

Monarch Aviation, Inc.

Monarch Aviation is one of the privately owned and managed fixed-base operations located at the Monterey Airport. The owner and president is Mr. Jim Redman. There are eighteen employees with a gross payroll of over \$150,000. Gross sales for the year ending June 30, 1972 were \$874,000. This was only the second profitable year in Monarch's history. Facilities include the maintenance and servicing of most propeller and jet aircraft. Business is now primarily centered around small propeller aircraft. There is a flight school offering ratings up to but not including Airline Transport Ratings (ATR's). In addition rentals and charters are available from a fleet consisting of eight Piper aircraft. New Piper aircraft and used miscellaneous aircraft are for sale. The gas franchise is held by Standard Oil Company. There are now approximately 47 aircraft based at Monarch Aviation. The District Board at present is considering the possibility of constructing a new maintenance hangar to be leased to Monarch Aviation. The lease on the new building would be designed so as to completely amortize the investment in 15 years.

Del Monte Aviation Inc.

The other fixed-base operator located at Monterey Airport is Del

Monte Aviation. Del Monte Aviation is also privately owned and operated. Mr. Walt Stewart is the owner and president. There are forty full-time employees and four part-time employees with a gross annual payroll of \$300,000. Gross sales in 1972 were \$1.8 million. Del Monte has De Haviland and Lear Jet maintenance service in addition to their propeller aircraft service. There is a flight school which offers ratings including the Airline Transport Rating. There are four aircraft available for rentals and flight instruction and four more aircraft available for charters. Del Monte is a dealer for new and used Cessna aircraft. Shell Oil presently has the gas franchise and in addition contracts with both United Air Lines and Hughes Airwest Air Lines for servicing their jet aircraft. Del Monte presently estimates that they have 50-60 aircraft based at their facility. There is also an Avis Car Rental outlet at Del Monte.

There is much statistical information compiled on both Monarch and Del Monte Aviation because of a recent proposal to allow the entry of a third fixed base operator at the Monterey Airport. This information is mostly cost data.

National Car Rental

The Monterey Peninsula Airport National Car Rental office is the main National Car Rental office for the Monterey area. The franchise was taken over from Butts Pontiac-Cadillac, Incorporated during 1972. There are other offices in the area; Fort Ord, the Presidio of Monterey and Del Mack Chevron Station. Their function is to provide rental cars to the arriving airline passengers. The gross sales for the approximately six months the present owners operated at the airport was approximately \$95,000. There were 2700 car rentals out of a local inventory of forty

cars. Employed at the airport location are seven employees with a gross payroll of over \$2,000 per month.

Avis Rent-A-Car

The Avis Rent-A-Car office at the Monterey Airport is the main Avis office of the Peninsula. They also rent cars to arriving airline passengers. In 1972 the Peninsula-wide sales were about \$350,000 with approximately seventy-five percent of that amount generated at the airport. There was a total of 6541 cars rented at the airport. At the airport and downtown locations there are fifteen employees with a gross annual payroll of about \$57,000. In the local inventory there are between 175 to 225 available cars, varying with the season. There is a branch office at Del Monte Aviation.

Hertz Rent-A-Car

The Hertz Rent-A-Car office at the airport is also the area's main Hertz office. There are five other Peninsula locations with one also in Salinas. The gross sales in 1972 was over \$400,000 with approximately 7700 cars rented, the majority of these being cars rented to arriving airline passengers. There are 100 cars in the local inventory. At the airport office there are six employees with an annual payroll of \$40,000.

Airport Transportation Company

The Airport Transportation Company is a branch of the privately owned Bay Rapid Transit Company. Mr. Curtis Sanders is the owner and operator. Included in the Bay Rapid Transit Company is the Airport Transportation Company, Greyline of Monterey-Carmel and the Bay Rapid Transit Company which provides scheduled Peninsula bus service. The Airport Transportation Company provides cab service to arriving and

departing airline passengers. The Airport Transportation Company's equipment consists of seven limousines and three buses. The bus service is primarily to handle the Fort Ord military troop movements. The military generates about one-third of the gross revenues of this company. The local travel agencies also use the limousine service for small tour groups.

There are twelve full and part-time employees including Mr. Sanders and a dispatcher located at the airport. Gross salaries amounted to about \$80,000 in 1972. Salaries for the full time employees range from \$6,500 to \$11,500. They are paid on a commission basis. The driver receives forty per cent of his gross sales, the company receives fifty per cent and the Airport District receives ten per cent. Gross sales amount to about \$150,000 per year. The Airport Transportation Company has plans of negotiating for the purchase of three more limousines.

Campos Delivery Service

Campos Delivery Service is a family-owned and operated business which has been in existence for seven years. Most of the members of the Campos family help out in running the business. Because of lack of industry in the Monterey area this has been an extremely slow growing business and at present doesn't seem to be tremendously profitable.

The Campos Fleet consists of three radio dispatched panel trucks operating in Monterey, Salinas and Watsonville on a twenty-four hour basis. Approximately half of the Campos' business is with United Air Lines and the remaining half is with Hughes Airwest Air Lines. Their rates are controlled by an airline owned company in Washington called Air Cargo International.

Golden Tee Restaurant

The Golden Tee Restaurant is owned and operated by Mr. Lou Menendez and Mr. George Reta. Their facilities include a coffee shop, a restaurant and a bar. With the opening of the center section of the new terminal there will be in addition a quick service stand-up snack bar and a small seven-stool cocktail lounge.

Some phase of their operation is open from 6:30 A.M. to 1:00 A.M. There are twenty-seven full and part-time employees. The restaurant served approximately 100,000 meals in 1972 which was apparently a low year due to construction and parking problems. Their gross sales were approximately \$325,000, of which the bar generated about \$95,000, the coffee shop generated about \$70,000 or less and the restaurant generated the remainder. Thirty per cent of the bar-generated revenue was the result of bar orders from the restaurant.

From time to time Mr. Menendez and Mr. Reta have conducted market surveys to determine the source of their patronage. In general they have concluded that the restaurant is mainly dependent upon local repeat patronage. The coffee shop and the bar are used mainly by the military and transient airline passengers. Much of their business is the result of random occurrences such as cancelled flights or diverted flights due to poor weather. .

Airport Square Gift Shop

The Airport Square Gift Shop is owned by Mr. Neil Williamson who has owned the shop for six years. Miscellaneous magazines, candy, souvenirs and novelties are sold in the shop. There are four employees, including the owner.

The present shop is approximately 300 square feet. When the addition to the terminal is completed a new gift shop will be built with approximately twice the square footage. The shop is open from 7:30 A.M. to 6:00 P.M. The gross sales and employees' salaries were considered privileged information by the owner. This information is available from the Monterey Peninsula Airport District Manager's office.

VII. MONTEREY PENINSULA AIRPORT DISTRICT

Interviews with Board Members and the Management

It is important to know the static situation of the airport, the current organization, the projects under development and current information on all the tenants, concessionaires and airport departments. In addition it is also equally important to know the future plans or the dynamic aspects of the airport. Since the Monterey Airport District Board is responsible for the goals and long range policies of the airport, interviews were held with each of the five Board members to determine what problem areas they felt would be especially important in the coming years. Besides indicating the problem areas they indicated the particular solutions they felt were appropriate. In addition airport management is intimately involved on a daily basis with the operation of the airport. The airport management implements the various policies of the Board and in turn provides the Board information about the current operations of the airport. In a sense airport management is also policy making, first by its particular interpretation of Board policy decisions and secondly by the information furnished the Board. It is in actually a better position to know the particular problem areas, the direction to proceed to solve these problems and the long run future arrangement of operations to prevent these problems from re-occurring. For these reasons airport management was interviewed for their opinions.

In the discussion of the problem areas there was no reason to identify particular opinions with the particular person involved. What was wanted was a listing of the issues and possible solutions which were considered appropriate to one or more of the people interviewed.

In addition some indication of the consensus of opinion was given on some issues to indicate whether the solution was possibly a majority view.

The main current problem confronting the Board, as already discussed in detail, is the satisfactory completion of the new terminal addition. Another current problem is whether some of the high ground on airport property should be sold for fill and whether this revenue could be used to build a maintenance hangar to lease to Monarch Aviation. Also being considered is the possibility of extending the taxiway to the end of Runway 6 to, as often as possible, segregate the commercial airline traffic and the small general aviation aircraft. In addition, some of the major long range problems are:

1. What to do with the north side of the airport property?

The north side of the field used to be occupied by the U.S. Navy. It consists of two sections; the western section and the eastern section. The western section contains about ten assorted old hangars and buildings presently on short term leases to miscellaneous small businesses pending the completion of a master plan by the summer of 1974. This section has a large aircraft parking apron adjacent to the 4000 foot runway. The eastern section also has an aircraft parking apron adjacent to the 6600 foot runway. This eastern section is almost completely undeveloped and has comparatively poor vehicular access. Opinions on the development of these two northern sections range from no development to an industrial park by most persons. The industrial park would have ideally aviation or aviation-oriented businesses, especially around the valuable apron area. There would be a possibility of non-aviation businesses in areas other than around the aircraft aprons. The type of businesses desired would be small concerns with as little noise and

air pollution as possible. One person mentioned the possibility of interviewing existing businesses located on the north side as to their willingness to make capital investments for a guaranteed long term lease. At present there are indications that some civilian weather research firms might be willing to locate on the north side. On the property adjacent to the airport's north side, the U.S. Navy is planning to construct a \$3.0 million facility to centralize much of the Navy's Fleet Numerical Weather Central which is presently spread throughout the Peninsula. The closeness to this facility is the reason for the research firms wanting to locate on the airport. Another idea considered by some was the possibility of shifting the Monterey Fairgrounds from its present location at the approach end of runway 10, which it has reputedly outgrown, to the area on the north side of the field. Also suggestions were made for considering the possibility of locating a third fixed-base operator on that side, if economically feasible or of possibly in the long run moving all the general aviation businesses to the north side. Another possibility is the development of a large scale air museum as a significant tourist attraction for the Monterey Bay Area.

2. What about land use zoning around the airport?

The Monterey Peninsula Airport is surrounded on three sides by developed property. To the north, west and south are commercial, residential and some recreational areas all within incorporated areas. To the east is a large unincorporated area called the Work Ranch. Presently this area is zoned agricultural but plans are in the works to rezone to single-family residential. Another open area called the Ryan Ranch was annexed to the City of Monterey several years ago but is still also zoned agricultural. To the east near the end of the runway

is a restaurant, called The Chateau, which has been the subject of a noise disturbance lawsuit which is apparently still pending. At present the primary takeoff and landing runway at Monterey is to the west which routes traffic over residential areas and the downtown business section. This routing is the origin of many of the noise complaints.

Most of the Board members agree that this is one of the major future problems; insuring compatible land zoning of those parts of the Work and Ryan Ranches which are affected by the flight path of aircraft. Possibly recreational or light industrial zoning would be more appropriate than rezoning residential. One Board member favors the outright purchase of The Chateau Restaurant to prevent future complaints and possible law suits.

3. What about the tax situation?

At present there is a tax of \$.11 per \$100.00 assessed valuation paid by all property owners in the Monterey Peninsula Airport District. The tax has remained at this level for the past eight years. The maximum legal rate is \$.20 per \$100.00 assessed valuation. Some members of the Board feel that this tax should be abolished. Most agree that, if possible, it should eventually be abolished but with some reservations. One reason given for not abolishing the tax immediately is the desirability of having this secure income when applying for Federal matching funds to make improvements in the airport. With some of the eventual improvements generating revenue the tax can possibly be phased out. One Board member favors the abolishment of the district tax and the establishment of a user charge or a head tax. Federal guide lines on the legality of the head tax are being developed at present.

4. What about a longer runway?

The present major runway is 6600 feet long. There is a proposal on the April 19, 1972 revision of the Monterey Airport Layout Plan for a 1400 foot runway extension. The present length is reputedly adequate for the type of aircraft and the length of the routes flown. If longer routes were flown the jets would require a longer takeoff roll and the runway would prove to be too short. Some persons proposed lengthening of the runway as an added safety factor. One person wanted a thorough analysis into the existing safety of the 6600 foot runway and the present jets in service and the effect on safety of increasing the runway the additional 1400 feet. A decrease in the aircraft noise level was thought by some to be a result of the added runway length. There was some misconceptions over whether the airport was operating under a waiver concerning the short runway length. The airport is not operating under a waiver. For the type of jets and the routes flown the 6600 feet is adequate. The misunderstanding stems from the fact that if the airport was building a new runway and applying for Federal Aviation Administration (ADAP) matching funds, in order to receive the matching funds the runway would have to be at least 7300 feet long. A 6600 foot long runway could not be built with Federal matching funds.

5. What about major taxiway extensions?

Several of the Board members thought the taxiway from the commercial ramp area to the end of runway ten should be extended to possibly make runway ten the main takeoff and landing runway. This way the aircraft traffic on approaches could still use the instrument landing system but be at low enough power setting during descent so as to not be a significant noise problem. On takeoff to the east, utilizing this new taxiway to

runway ten, the aircraft would be flying over relatively unpopulated areas which, hopefully in the future, could be compatably zoned for the aircraft noise. One problem that would have to be examined is the noise of a jet engine run-up on takeoff on runway ten.

6. What are the possibilities of service to more California cities?

Most of the Board members and the airport management favor the introduction of a third carrier into the Monterey Airport. Either Air California or Pacific Southwest Airlines would be primarily considered. The one objecting member favors a traffic study first to determine the demand for an additional airlines, and if the demand exists a determination of the type of airline that can best meet this demand. There is physically enough room with the new terminal addition to provide facilities for another airline. It is felt that Hughes Airwest presently could be located in the new terminal next to United Air Lines only on the condition that a third major airlines begins Monterey service. Presently Air California and Pacific Southwest Airlines are considering a possible merger so the introduction of one of these airlines is not in the immediate future. With the introduction of possibly a merged Air California and Pacific Southwest Air Lines, new cities served could be from the list of existing cities served by these airlines: Sacramento, Hollywood, Burbank, Ontario, Long Beach, San Diego, Palm Springs and Orange County, in addition to those destinations already served by the present airlines.

7. What about the introduction of a third fixed-base operator?

In January of 1973 a proposal for a third fixed-base operator located at the airport was considered. The group wanting to establish a third fixed-base operation represented Beechcraft Aircraft. The opposition

of course was Del Monte Aviation and Monarch Aviation. The Beechcraft argument was the quality, good marketing and demand for the Beechcraft Aircraft. The opposition's stand was that from a financial standpoint three fixed-base operators could not operate at a profit at the airport; that one or more would go bankrupt. The proposal was tabled for several reasons: the relatively short time that Monarch Aviation had been showing a profit after many years with different owners and unprofitable business; the lack of an acceptable financial set-up for the Beechcraft dealership; and lastly the lack of a completed master plan. There was no detailed analysis to determine the possibility of creation of increased demand by the introduction of a third fixed-base operator.

8. What can be done about the existing aircraft noise problem?

Airport management and Board members seem to be acutely aware of the noise problem generated by the airport aircraft traffic. The Monterey area has vocal conservationist groups as well as vocal individuals who make themselves heard and politically felt. One step the Board has taken is a verbal agreement with the airlines that there will be no flights scheduled between approximately 11:00 P.M. and 7:00 A.M. In March of 1973 this agreement was challenged by United Air Lines announcement of scheduling a flight to leave Monterey at 6:45 A.M. No decision has been reached as to what action should be taken. In addition a proposal was made by one person to set up a data collection system for all noise complaints at some central location. A standard form would suffice with all the complaints routed to a particular airport member rather than the fragmented collection system apparently in existence now. With the type of representation on the Board it would be hoped that some interaction between the airport and the environmental

groups would be possible. In addition some of the noise abatement pilot procedures should be discussed with appropriate representatives of the airlines. Information should be gathered on new type traffic patterns; two-segment, or steeper glide slope approaches and other noise alleviating innovations. Many of the Board members want a noise study completed. This is of course part of the Airport master planning process.

9. What about the organization of the airport management?

A complete organization manual should be developed. This manual should contain complete job descriptions and a complete organizational diagram (chain of command chart) of the airport management system. All salaries should be disclosed and their basis for payment, whether they are paid on an hourly rate or a flat yearly salary, should be down in print.

10. How effective is the budgeting system?

A point brought up by a Board member was the necessity for a complete examination and refinement of the budgetary development system. A budget on both a yearly basis (as exists now) as well as a longer range (2 to 5 years) capital budget would be appropriate.

11. What is the possibility of a public relations program?

In general most of the Board felt that there was an inadequate or even non-existent public relations program for the airport. One Board member suggested a public relations consultant on a retainer to inform the public of various programs and developments at the airport. It was felt that the establishment of a Cessna Citation maintenance facility at the airport was defeated primarily out of public ignorance of the type operation involved, the potential economic benefits of the operation and the relative quietness of the aircraft. Another area that needs

public relations work is that of noise pollution. Any further development of the airport, i.e., longer runways, more efficient taxiways, an industrial park, etc., must be reasonably justified to the public or it will probably be blocked by a vocal minority. One public relation tactic is the promotion of the general aviation aircraft show which has occurred in past years and was organized by Mrs. Shirley Drennan, manager of Avis Rent-A-Car.

12. Other problem areas brought up were:

-----The possibility of the building of a motel on the airport: this previously had been decided against because of the competition between this motel and others in the area.

-----Research on STOL (Short Takeoff and Landing) aircraft: a current study on the applicability of STOL aircraft for the Monterey Airport was thought to be useful.

-----Studies of similar airports, such airports as Santa Barbara Municipal, Santa Rosa and Patrick Henry Airport near Newport News, Virginia were thought to have problems similar to Monterey Airport. Their solutions to these problems should be investigated.

-----A study of the interrelationship between existing and potential Salinas Valley Airports and the Monterey Airport should be examined.

-----The modification of Fort Ord's restricted airspace should be considered to enable traffic to be routed around Marina and Seaside.

-----The use of fire department personnel for other duties but so as not to interfere with their primary duty of structural and crash fire protection should be studied.

VIII. PRELIMINARY ANALYSIS

In previous sections of the thesis the various problems thought to be significant were identified and discussed from various points of view. The question remains after identifying the many problems at the airport: what is the best way to structure an approach to these problems so as to arrive at the "best" overall solution? Each person interviewed has at least a slightly different solution for the particular problem and in addition assigns different priorities to the relative importance of particular problems. Also the people interviewed could possibly not be considered representative of the Peninsula population. Other problems and solutions could undoubtedly be identified by various community groups.

All of the differences above must be isolated, discussed and resolved prior to committing to a particular airport master plan. Consideration of the view points of all groups and a general policy for the goals and direction of the airport must be reached prior to committing to a particular master plan. The general policy decided upon must be of a sufficiently long-term nature that short-term changes, such as economic conditions, environmental conditions, political conditions, etc. will not significantly change the basic usefulness and applicability of this general policy. This general policy should provide the guidelines within which the airport master plan can operate to solve the various specific problems concerning the airport. If this general policy is not developed with broad public support, the result will be the short term solution of specific airport problems based upon a particular existing viewpoint. The specific problem may not in fact be the larger

problem in the long-term sense. Short-range solutions may actually prove to be counter to the long-range goals of the airport. Short-range solutions may result in community opposition of the creation of more problems than existed previously. Without an acceptable long-range policy the airport is liable to encounter increasing resistance to expansion plans, existing taxes and existing noise and air pollution.

There are a sequence of steps that must be taken in order for the airport master plan to be a "success" in the longterm sense.

1. Identification of broad issues and the resolution of general policy through public examination and suggestions.
2. Investigation of particular problems.
3. Identification of alternative solutions to these problems keeping in mind the general policy and the interdependence of the problems.
4. Cost and benefit studies of each alternative.
5. Means for obtaining the public's educated reaction or public preferences for each alternative.
6. Resolution of the alternatives.
7. Formalization of the airport master plan.

One of the possible ways to structure an approach to the airport's problems is through a version of an analytic management system which has been in existence since 1961 called the Planning, Programming-Budgeting System (PPBS) or sometimes known as just Program Budgeting. In 1965 this system was made well known by its application in the U.S. Department of Defense by the then Secretary Robert McNamara. The PPBS has also been applied with varying degrees of success at state and local levels to such areas as transportation planning, master plan preparation, water resource project analyses, school district decision making and insurance company planning to name a few. Operations Research students are introduced to this concept in various courses.

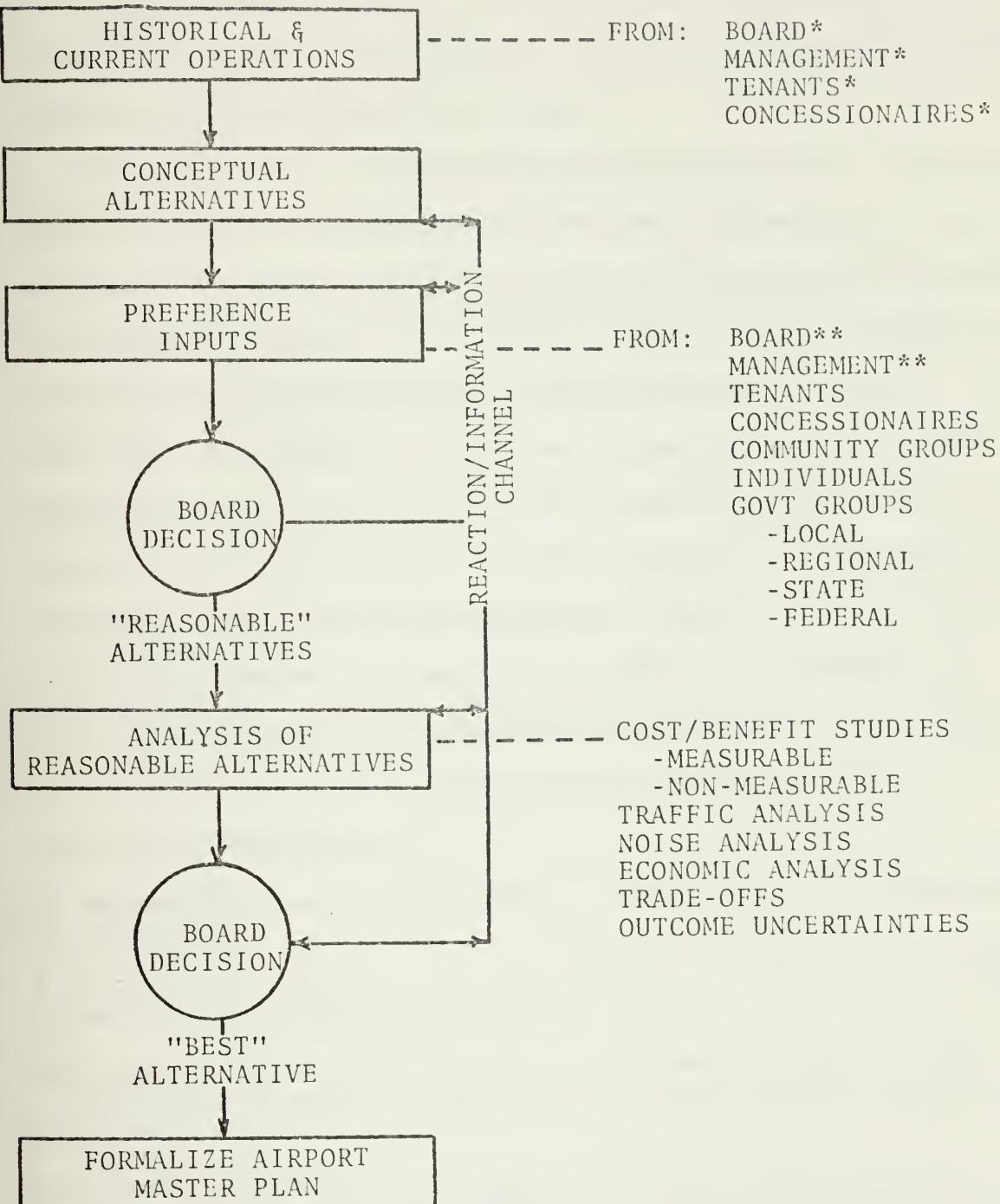
David Novick, in his text Program Budgeting (Ref. 6) describes PPBS as a management system that has ten distinct features. They are:

1. Definition of the organization's objectives in as specific terms as possible.
2. Determination of programs, including possible alternatives, to achieve the stated objectives.
3. Identification of major issues to be resolved in the formulation of objectives and/or the development of programs.
4. An annual cycle with appropriate subdivisions for the planning, programming and budgeting steps to insure an ordered approach and to make appropriate amounts of time available for analysis and decision-making at all levels of management.
5. Continous re-examination of program results in relationship to anticipated costs and outcomes to determine need for changes in stated programs and objectives as originally established.
6. Recognition of issues and other problems that require more time than is available in the annual cycle so that they can be explicitly identified and set apart from the current period for completion in two or more years as the subject matter and availability of personnel require.
7. Analysis of programs and their alternatives in terms of probable outcomes and both direct and indirect cost.
8. Development of analytic tools necessary for measuring costs and benefits.
9. Development each year of a multi-year program and financial plan with full recognition of the fact that in many areas resource allocations in the early years (e.g., years one through five) require projections of plans and programs and their resource demands for ten or more years into the future.
10. Adaptation of existing accounting and statistical reporting systems to provide inputs into planning and programming as well as continuing information on resources used in and actions taken to implement programs.

Some of these features of the PPBS are directly applicable to the airport master planning process, but in order to be useful they must be applied in more specific terms to the Monterey Peninsula Airport.

Figure 3 is a flow chart of the sequence of events and decisions necessary to decide upon a "best" alternative for the Monterey Peninsula

PRELIMINARY AIRPORT MASTER PLANNING PROCESS



* COMPLETED IN THESIS

** PARTIALLY COMPLETED IN THESIS

FIGURE 3

Airport. This flow chart is called the "Preliminary Airport Master Planning Process." The process is initiated by first gathering information on the historical and current operations of the airport. A first attempt at this was initiated in this thesis and was the result of existing studies and personal interviews.

With this type of information the airport can be viewed in the perspective of "what has happened before and what is happening now." It can then be decided what possible conceptual alternatives or what possible directions are available to the Monterey Airport. These conceptual alternatives or directions should encompass all possible feasible solutions. For example the airport has six possible conceptual alternatives which are concerned with the most important issue; the policy towards "growth" of the airport. Growth here means very generally the development and improvement of existing facilities and existing services so as to meet the basic transportation demands of the community. At this stage of visualizing broad conceptual alternatives it is important not to define growth in any more specific term than this. The conceptual alternatives are:

1. Decrease the available air transportation services and facilities at the airport.
2. Terminate the growth of air transportation services and facilities at its present level at the airport.
3. Continue the growth of existing air transportation services and facilities to match the growth in the demand for this existing type of service.
4. Increase the growth of air transportation services and facilities not only by matching the growth in the demand for the existing type of service but by allowing the entry of a major intrastate airline to provide more convenient service.

5. Increase the growth of air transportation services and facilities by matching the growth in demand for the existing type service, but also offering direct interstate flights to such places as Denver, Chicago, etc.
6. Increase the growth of air transportation services and facilities not only by matching the growth in demand for the existing type of service, but by allowing both new intrastate flights and interstate direct flights to such places as Denver, Chicago, etc.

The first conceptual alternative of decreasing the available air transportation services and facilities at the airport is a solution possibly advocated by staunch environmentalists. This solution would decrease the noise and air pollution problems by decreasing the frequency of flights per day. But, it would have a deleterious effect on the many direct users of the airport and on the indirect users of the airport through its impact on the economy of the Peninsula.

The second conceptual alternative entails continuing the airport at its present size. This solution would result in no further increase in noise and air pollution but would have other serious side effects. The average load factor of airlines presently at the airport is reported to be 80%. This means that on the average 80% of all seats on aircraft flying in and out of the Monterey Airport are filled. As the demand for air transportation increases with the growth in population and with the rise in disposable income, the new demand will saturate the existing facilities at peak passenger movement times causing passengers to make reservations weeks in advance. Thus the convenience per passenger will be decreased. As the air service becomes less and less convenient because of reservation inflexibility and congestion the increasing demand will shift to other modes of transportation; i.e., bus, automobile, etc.

The third conceptual alternative involves continuing the growth of the airport to meet the increasing demand for the existing type of service. This would be in effect holding the service or convenience per passenger at the same level as now exists. Unless there were major technical advances in quieter and less polluting jet engines installed in airline aircraft and/or unless there are changes in both airport and airline operational procedures, there would be an increase in noise and air pollution with this alternative. The alternative would necessitate gradually increasing the frequency of the commercial traffic as demand increased if the same size jets are used. Another possibility would be holding the frequency constant and using a larger jet aircraft to handle the increased passenger load. Still another possibility would be demanding that the airlines serve the airport only at times when the service is demanded by the community rather than the existing system where the flights are scheduled to best meet the interconnecting flights out of Los Angeles and San Francisco.

The fourth conceptual alternative involves increasing the convenience and service offered per passenger not only by meeting the growth in demand for existing service but by offering additional service; the introduction of a major intrastate airline. The new airline would fly to destinations other than just Los Angeles and San Francisco. It would fly to possibly to Palm Springs, San Jose, Orange County, San Diego, etc. Because of the improved service and convenience in terms of more direct routes, better schedules and lower fares, there will be additional created demand over and above the increase in demand for the existing type of service. This will increase the aircraft frequency resulting in even more noise and air pollution given that these problems haven't been

solved either technologically or minimized operationally. This alternative also increases the passenger flow which could eventually result in excessive congestion at the airport. There will also be increases in tourism and business travel over and above the growth explained in conceptual alternative three. This could possibly over saturated existing and potential tourist facilities and result in a major growth in business development.

The fifth conceptual alternative introduces more convenience and service per person by offering in addition to the existing service, direct interstate flights to major cities. This sounds inconceivable for the Monterey Peninsula to generate this much major long distance traffic but in the future this could indeed be a possibility. The disadvantages are again noise and air pollution along with potential passenger congestion. This alternative would definitely necessitate a longer runway, larger jet fueling capacities for the airport, and a major change of concept and design of the airport facilities.

The sixth and last conceptual alternative involves the combination of both conceptual alternatives four and five; the addition of increased intrastate service and the addition of interstate service. This type of service would fulfill most if not all possible conceivable demands for air transportation. It would result in major changes in air transportation planning concepts for the Monterey Airport. It would result in noise and air pollution and congestion which would be difficult if not impossible to compensate for in an area the size of the Monterey Airport and the Monterey Peninsula.

The next step in the "Preliminary Airport Master Planning Process" after formulating all possible conceptual alternatives is the compilation

of "preference inputs." The preference inputs consist of gathering the opinions of all involved groups and individuals concerning their preference for a particular conceptual alternative after educating them as to what the problems and alternatives are. The Airport Board and management have been interviewed and their opinions are contained in this thesis. They were not specifically queried on their preference for one of the list of conceptual alternatives, though they seemed to in general lean toward conceptual alternative four; the introduction of a major intrastate airline. These interviews should be conducted again, specifically asking for their preferred conceptual alternatives. In addition the tenants and concessionaires should be personally interviewed to determine their preferences. The preferences of some of the various community groups can be sampled in part by the opinions of the Monterey Airport's Citizens Advisory Group. Other social, political or economic groups in the community should be contacted. Also because of the large number of individuals who aren't involved in various major community groups, a small sample house to house or mailed survey should be conducted to determine their preferences. A survey conducted of the airport passengers would be useful but would not be indicative of general community preferences for any particular conceptual alternative. This entire process of surveying the opinions of various groups must be viewed, not as a compilation of opinions alone but also as an educational process. Through public meetings, study groups, the news media and personal confrontation, the various groups must be made aware of first the various conceptual alternatives and secondly the various trade-offs involved in the selection of each particular conceptual alternative.

In addition all regional, state and federal agencies should be surveyed as to their rules, regulations and air transportation and airport master planning efforts. At the regional level the Monterey County Airport Land Use Commission is waiting the completion of their regional airport master plan pending the completion of Monterey Peninsula Airport's, Salinas' and King City's airport master plans. The State of California's Bureau of Aeronautics is presently working on a statewide Master Plan of Aviation. In Washington the Civil Aeronautics Board is initiating a nationwide air transportation master plan.

With the preference inputs from all groups and the information from regional, state and Federal agencies the Airport Board should if necessary modify and refine the various conceptual alternatives. Additional conceptual alternatives identified by various groups or individuals should be considered. Information from regional, state and Federal agencies should be used to modify or eliminate conceptual alternatives which have a sub-optimal effect on regional, state or national master plans. It would then be up to the qualitative judgment of the Airport Board using the preference inputs and the Board's views on the basic objectives of the Monterey Airport to determine the reasonable alternatives to analyze in more detail.

After completing the interviews with the Airport Board and management, the general impression was that none of them favored decreasing the available air transportation services and facilities at the airport. On the other hand none favored the unrestricted development or the major change in concept of the airport to an interstate facility. All persons highly valued the quality of life existing on the Monterey Peninsula and wished to preserve this quality. Even though the Airport Board

and management seem to favor certain alternatives more than others, it is important in selecting "reasonable" alternatives that all preferences inputs from all sources are considered in the Board decision process. Information reaction channels, as depicted in the flow chart, must be kept open to all involved parties to insure that all groups furnishing preference inputs realize that their opinions are being considered. Involving these groups in the initial conceptual phases and also during later phases of the Preliminary Airport Master Planning Process will more likely insure their backing and support at final stages of the process.

After these "reasonable" alternatives have been specified by the Board, the analysis phase begins. Each reasonable alternative should be evaluated in terms of a cost and benefit study. Measurable costs as well as non-measurable costs should be specified. Costs should be stated in terms of real dollars expended for that particular service as well as in terms of benefits lost. Noise and congestion should be analyzed in terms of benefits lost. A particular alternative should be evaluated in terms of the non-measurable benefits gained or lost by changed noise levels or changed community exposure to a given noise level. Benefits and costs should be evaluated in terms of the decrease or increase of congestive conditions; both in access to the airport, passenger and aircraft flow at the airport and the necessary capital expenditures to ease these congestive conditions. Benefits should be stated in terms of convenience by better scheduling and more direct flights to desired destinations. The impact on the economics of the community by choosing a particular alternative should be analyzed in terms of costs and benefits. The trade offs between these costs and

benefits should be analyzed with the preference inputs from the community for the relative importance of various costs and benefits. To help visualize the trade offs involved in balancing the costs or lost benefits versus the benefits a diagrammatic presentation is shown in Figure 4.

A traffic analysis should be undertaken to determine the type of service desired. The uncertainties of the outcome of choosing a particular alternative should be specified and emphasized. These types of analyses are the type which can be done by students at the Naval Postgraduate School. The next section of the thesis will outline in more detail some of the specific analyses that can be done.

From these analyses the Airport Board should both qualitatively and quantitatively decide upon the "best" alternative. Once again the information and reaction channel between the Board and various airport and community groups should be used to involve the groups in both analyzing the various alternatives and in reaching a particular decision. The major decision will then have been made: the long range policy for the Monterey Peninsula Airport.

Once this process has been successfully completed for the general policy of the airport, it can be used for the various other less major developmental problems; i.e., to build or not to build an industrial park, to extend or not extend the runway, etc. These less major problems should be solved with more ease because of the trust and channels of communication established by the responsive decision-making process used to determine the general policy at the airport.

After all identified problems are analyzed and resolved the airport master plan can be formalized containing the compilation of the "best" solutions of the major and less major problems with the support of all or most of the community groups.

MONTEREY AIRPORT AVAILABLE

TRADE-OFFS

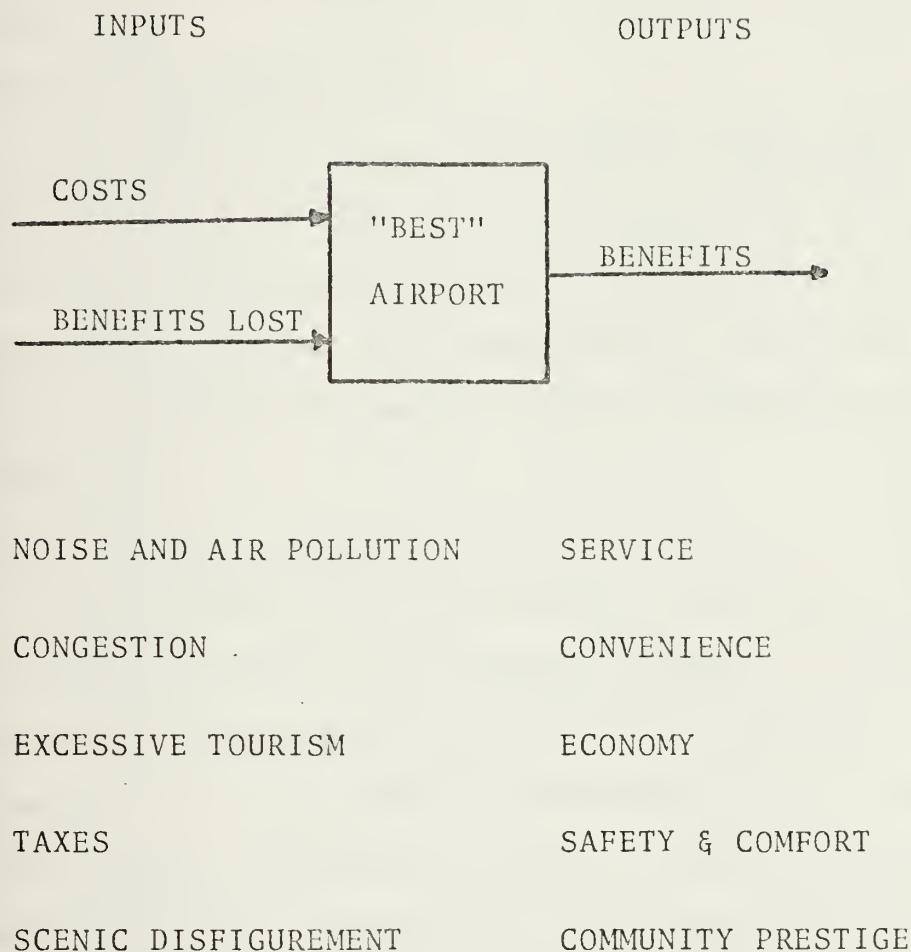


FIGURE 4

IX. NAVAL POSTGRADUATE SCHOOL STUDENT PROJECTS

This section of the thesis is intended to isolate particular areas of the airport problem appropriate for analysis by Naval Postgraduate School Operations Research students. The listed areas are by no means exhaustive or exclusive of subjects previously mentioned in the thesis. These are areas that may be specifically used in the formulation of the airport master plan or areas that would possibly improve existing airport operations.

1. Compilation of Preference Inputs

In the Preliminary Airport Master Planning Process some of the preference inputs for the type of airport desired was collected from the Airport Board and management as described in a previous section of this thesis. This process should be continued as outlined in the Preliminary Analysis section, compiled and presented to the Board.

2. Economic Worth of the Monterey Airport

A useful analysis would be an analysis of the economic worth of the Monterey Airport to the Monterey Peninsula as it exists presently and also under various "reasonable" alternatives. The objectives of the study would be to demonstrate the relationship of the airport's activities to the level of activity of the Monterey Peninsula's economy. Crudely we see that cutting off the flow of air passengers would cripple a portion of the tourist industry and greatly handicap military installations and other nationally based firms. On the other hand continued large increases in passengers will not come about without more motels, more military housing, etc.

The relative size of these effects should be determined. The availability of other modes of transportation should be considered in determining the economic impact of Monterey air transportation.

3. Traffic Forecasts

A suitable project for an Operations Research student would be the forecasting of increases in based aircraft, aircraft mix, aircraft operations (both general aviation and commercial aviation), enplaned passengers, air cargo and airport access traffic. The existing historical data on these subjects could be gathered and the applicable regression or other techniques can be used to give a 2, 5 and 10 year forecast. Several regression (forecasting) subroutines are available on the school's IBM 360/67 computer. It would be necessary to isolate the segments of the passenger market and to forecast these segments individually. Such segments as military, business, tourist and local traffic obviously increase at different rates. A small sampling survey would be useful in identifying the existing proportion of passenger segments. Then with the use of United Air Lines or Airwest Air Lines historical market surveys, or possibly Peninsula Chamber of Commerce data or military population data, the individual forecasts could be made and then aggregated for a better forecast.

4. Market Surveys

It would be useful to the Board to know what type of air service is demanded by the District. Another small sampling survey should be made of passengers to determine their final destinations. Is most of the demand for travel just to Los Angeles or San Francisco? Is most demand for flights linking to other flights for interstate

flights? Are a significant proportion of the passengers desiring flights to other California cities? An important aspect of this latter question is finding out the number of people using other forms of transportation to other California cities. A questionnaire should be sent to a random sampling of the Peninsula population to find out whether they would shift to air transportation if the appropriate service was available with convenient scheduling and a reasonable cost.

5. The Effects of Lengthening the Runway

A cost and benefit study on the effects of lengthening the runway would be useful. The effects on safety should be examined. Safety should be thoroughly and objectively examined from the particular aircraft and pilot's point of view. The question of a need or necessity of lengthening the runway should also be answered in light of potential STOL (Short Take-Off and Landing) aircraft developments. As an example of the sort of analysis which can be useful, the alleviation of much of the noise problem by the lengthening of the runway can be examined. From a pilot's point of view an aircraft with a particular gross weight for particular climatic and topographic conditions requires a certain lift-off speed and a certain length of ground roll before becoming airborne. The aircraft designers and the airline pilot's policy is to have this standard operational procedure for flying a particular type of aircraft under those particular conditions. It is possible to change this operational procedure so as to lift off at a higher speed allowing a faster initial rate of climb and thus more altitude and less noise effect on the community. This is dependent upon the

aircraft design. The higher lift off speed would subject the aircraft airframe to greater vibration and stress from remaining on the ground for a longer period of time. The alleviation of noise in this particular case is not a feasible result of an extended runway without a corresponding operational change. This type of analysis should always be considered. Will an operational change solve some of the existing problems? Will this change necessitate major capital expenditures?

6. Analysis of the Entry of a Third Fix-Base Operator

An objective analysis of whether a third fixed-base operator is presently justified at the airport based upon a profit analysis of existing fixed-base operators and an analysis of the potential demand for the services of a third fixed-base operator could be undertaken. If the conditions don't exist at present what are the conditions when the entry of another operator would be appropriate? A necessary condition for the successful completion of this type of analysis would be the full co-operation of the two existing fixed-base operators.

7. Parking

One serious constraint on the Monterey Airport is the limited amount of available parking space near the terminal area. Much of the parking close to the terminal is assigned to car rental agency automobiles because of their clout as a major airport revenue source. Should the best parking spaces be assigned based upon the highest revenue generated and paid to the Airport District or upon public service and convenience and tenant need? Another problem that should be addressed is whether the parking meter system at the airport is a profitable operation.

8. Lease/Purchase of Fire Engines

As mentioned before, the District is planning on leasing three new fire engines based upon the possibility that the Federal Government may increase the proportion of matching funds for the purchase of this type of equipment. An analysis should be made prior to their purchase of the advantages of purchasing the three outright or staggering the purchase and lease so as to not create major capital demands either at the time of initial purchase or at their replacement at the end of their useful lives.

9. Noise Study

One of the major issues concerning the Monterey Peninsula Airport District is the problem of noise generated by jet aircraft during approach, landing and takeoff. This issue more than any other could probably cause the defeat of any major development at the airport whether it be the extension of the runway or the introduction of another airline. Certain Board members have suggested a central noise complaint data collection program. Beyond this program a survey of the community should be made by questionnaire to assess the impact of aircraft noise.

Bolt, Beranek and Newman, Inc., an airport consultant specializing in noise studies have many suitable questionnaires. An analysis of existing noise levels could be made by department students using Physics Department equipment. In addition the U.S. Department of Housing and Urban Development in a publication entitled "Noise Assessment Guidelines" has a simple procedure for producing approximate NEF (Noise Exposure Forecast) contours for a particular airport and then a qualitative acceptability rating for varying distances from the runway.

Another analysis briefly mentioned before would consider the possibility of takeoff to the east over primarily unpopulated areas. A wind and air traffic pattern study would be necessary to establish the feasibility of primarily taking off to the east. The necessity of runway extension, taxiway extension, appropriate land use and land zoning to the east should be examined prior to the public outcry for the termination of increased flights and prior to the rezoning of this land for developmental purposes. If financially feasible, this land could be condemned and bought by the District. At the very least, the zoning could be made conducive to aircraft traffic pattern noise.

The new generation of jets, the Boeing 747, Douglas DC-10 and the Lockheed L-1011, are all quieter than the first generation jets including the type of jets that fly to and from the Monterey Airport. These size aircraft of course are inappropriate for the airport as it exists today. As the first generation jets are retired or as the airlines retrofit these jets with new quieter engines we can expect the noise problem to diminish and hopefully disappear. This solution will be many years coming. Meanwhile other solutions to diminish the noise impact may be found.

10. Industrial Park

A cost and benefit study should be completed on the proposal of an industrial park on the north side of the field. The costs of various financial approaches to the industrial park should be examined. Should the District construct business space and lease this space to various tenants or should the District lease land with basic amenities (access, water and electricity) and grant a

long enough lease to make it financially feasible for businesses to invest in business structures? Will this industrial park benefit the Monterey Peninsula by attracting new business or will existing business relocate to this area? A study of existing airport industrial parks would be useful. Some of the firms presently on short-term leases on the north side of the field may be potentially good long-term leasees. All firms should be interviewed as to their willingness to make substantial capital investments for guaranteed long term leases.

11. Monterey Peninsula Airport District Finances.

The possibility of expanding the District to include all of the Peninsula areas should be examined. Data supporting the equal use of the airport by Carmel Valley and Marina residents should be gathered if appropriate. The effect of their entry into the District would be an increase in the tax base and a resultant potential lowering of the tax per property owner. As it stands right now, a property owner with property assessed at \$6,000, pays about \$600.00 per year in taxes and pays \$6.00 of that tax to the Airport District. It should be decided whether a major goal of the airport is operation on a tax-free basis. If it is decided that tax-free operation is valid as a goal, a time frame for reaching this goal should be determined.

The equitable distribution of the cost of the airport operation should be examined on the basis of benefits received. The appropriate burden of cost for the airlines; general aviation; the direct users, the airline passengers; and the indirect users, all of the individuals of the Monterey Peninsula should be examined.

These projects are all examples of the type of analysis that Operations Research students are capable of handling. The results of these identified projects and others will aid the Board in its decision making by a structuring of all relevant facets of the various problems. This will lead to the "best" possible airport master plan for the Monterey Peninsula Airport District and the community it serves.

MONTEREY PENINSULA AIRPORT DISTRICT

Sources of Revenue

	FISCAL YEAR			
	70	71	72	73
Concessions etc.	171,139	184,814	209,258	266,000
Landing Fees	56,802	55,511	64,087	142,200
Taxes (local)	212,501	237,464	238,543	260,000
Other	100,021	114,037	116,209	199,549
Total	540,463	591,826	628,097	867,749

General Operating Expenses

	FISCAL YEAR			
	70	71	72	73
Salaries & Payroll	70	71	72	73
Burdens	75,763	92,562	127,161	287,010
Depreciation	111,453	119,971	109,712	(120,000)
Fire Department	---	---	30,978	14,790
Utilities	11,405	12,350	15,374	28,000
Insurance	8,991	9,414	11,266	20,000
Other	26,202	40,514	34,488	29,391
Total	233,814	274,811	328,979	379,191
				(499,191)

MONTEREY PENINSULA AIRPORT DISTRICT AIRLINE SCHEDULESUNITED AIR LINES

ARRIVE	LEAVE	TO
Originate	7:00 A.M.	San Francisco
Originate	8:15 A.M.	Los Angeles
10:36 A.M.	11:00 A.M.	San Francisco
2:23 P.M.	2:50 P.M.	Los Angeles
4:44 P.M.	5:10 P.M.	San Francisco
5:33 P.M.	6:00 P.M.	Los Angeles
8:04 P.M.	Terminate	From Los Angeles
10:06 P.M.	Terminate	From San Francisco

HUGHES AIRWEST AIR LINES

ARRIVE	LEAVE	TO	
6:48 A.M.	7:05 A.M.	Los Angeles	Ex Sunday
9:36 A.M.	9:50 A.M.	San Francisco	
2:23 P.M.	2:40 P.M.	San Francisco	
4:16 P.M.	4:30 P.M.	Los Angeles	Ex Saturday
7:32 P.M.	7:48 P.M.	Los Angeles	
10:35 P.M.	10:45 P.M.	San Francisco	Ex Saturday

VALLEY AIR LINES

ARRIVE	LEAVE	TO	
8:00 A.M.	8:10 A.M.	Santa Barbara	Monday only
8:00 A.M.	9:00 A.M.	Santa Barbara	Tuesday-Friday
10:35 A.M.	10:45 A.M.	San Jose Oakland	Monday only
11:25 A.M.	11:35 A.M.	San Jose Oakland	Tuesday-Friday
3:55 P.M.	4:00 P.M.	Santa Barbara	Ex Saturday
6:20 P.M.	6:25 P.M.	San Jose Oakland Fresno Bakersfield	Ex Saturday Ex Saturday Ex Saturday Ex Saturday

MONTEREY PENINSULA AIRPORT DISTRICT AIRLINE PASSENGER DATAPASSENGER DATA 1972

UNITED AIR LINES

Passengers on	152,742
Passengers off	156,325

HUGHES AIRWEST AIR LINES

Passengers on	50,388
Passengers off	54,173

GOLDEN WEST AIRLINES (service up to September)

Passengers on	1,785
Passengers off	1,313

VALLEY AIR LINES (service starting in September)

Passengers on	314
Passengers off	336

TOTAL

Passengers on	205,229
Passengers off	212,147

PASSENGER DATA 1968-1972

	<u>TOTAL ON/OFF</u>	<u>INCREASE OVER PREVIOUS YEAR</u>	
		ACTUAL	PERCENTAGE
1968	304,081	---	--
1969	390,366	86,285	+ 28%
1970	411,497	21,131	+ 5%
1971	388,852*	(22,645)	- 5%
1972	417,376*	28,524	+ 7%

* Hughes Airwest on strike December 1971 through February 1972

SOURCE: Monterey Peninsula Airport District Office Passenger Data

MONTEREY PENINSULA AIRPORT DISTRICT KEY OPERATIONAL PERSONNEL

MONTEREY PENINSULA AIRPORT BOARD

CHAIRMAN	Mr. Ted Durein
DIRECTOR	Mr. Alton Walker
DIRECTOR	Mr. Robert Spencer
DIRECTOR	Mr. Louis Schmidt
DIRECTOR	Mr. Richard Tourangeau
CHIEF COUNSEL	Mr. Lewis Fenton
DEPUTY COUNSEL	Mr. John Stohlton

AIRPORT MANAGEMENT STAFF

AIRPORT MANAGER	Mr. Nick Ford
ASSISTANT AIRPORT MANAGER	Mr. Randy Fuller
AIRPORT SECRETARY	Mrs. Sherry Bell
AIRPORT RECEPTIONIST	Mrs. Gene Dunne
AIRPORT CONSULTANT	Mr. Fred Kane
FIRE DEPARTMENT CHIEF	Mr. Don Wright
MAINTENANCE DEPARTMENT CHIEF	Mr. Shelby Malone
SECURITY DEPARTMENT CHIEF	Mr. Randy Fuller
SECURITY CONSULTANT	Mr. Robert Trenner

FEDERAL AVIATION ADMINISTRATION

AIRPORT TRAFFIC CONTROL CHIEF	Mr. Leo Yuckert
AIRWAYS FACILITIES SECTOR FIELD OFFICE SUPERVISOR	Mr. Harry Wasmundt

COMMERCIAL AIRLINES

APPENDIX D (continued)

UNITED AIR LINES MANAGER

Mr. Charles Lovette

HUGHES AIRWEST AIR LINES MANAGER

Mr. Fred Hykal

VALLEY AIR LINES TICKET AGENTS

Miss Jean Nieman

PRESIDENT (OAKLAND)

Mr. Sam Solis

Mr. James Stanhope

FIXED-BASE OPERATORS

DEL MONTE AVIATION, INC. PRESIDENT

Mr. Walt Stewart

MONARCH AVIATION, INC. PRESIDENT

Mr. Jim Redman

CAR RENTAL AGENCIES

AVIS RENT A CAR MANAGER

Mrs. Shirley Drennen

HERTZ RENT A CAR MANAGER

Mr. Burt Dienner

NATIONAL CAR RENTAL MANAGER

Mr. Darold Coelho

MISCELLANEOUS CONCESSIONAIRES

AIRPORT TRANSPORTATION COMPANY PRESIDENT

Mr. Curtis Sanders

CAMPOS DELIVERY SERVICE OWNER

Mr. Hilo Campos

GOLDEN TEE RESTAURANT OWNERS

Mr. Lou Menendez
Mr. George Reta

AIRPORT SQUARE GIFT SHOP OWNER

Mr. Neil Williamson

MONTEREY PENINSULA AIRPORT DISTRICT
CITIZEN'S ADVISORY GROUP

Nakamura, Kei Chairman
 P.O. Box 1532
 Monterey, California 93940
 375-5280
 372-0804

Members

Ausman, Mr. Vaughn L.
 908 Portola Drive
 Del Rey Oaks, California (Monterey P.O.)
 394-9527, Res.

Figen, Lowell I.
 Citizens' Airport Study Group
 P.O. Box 1627
 Monterey, California 93940
 373-4321, Off.
 375-9667, Res.

Goodwin, Mrs. E.S.L.
 P.O. Box 504
 Pebble Beach, California 93953
 624-2658, Res.

Hood, Al
 Carmel Valley Airport
 P.O. Box 467
 Carmel Valley, California
 659-4644

Knapp, Warren
 P.O. Box X-1
 Carmel, California 93921
 624-8231, Off.
 624-7168, Res.

Kren, Harold E.
 Harold E. Kren Assoc.
 P.O. Box 1421
 Monterey, California
 624-4484

McDonald, Blair
 P.O. Box 928
 Monterey, California 93940
 624-2704, Res.
 394-6541, Off.

Representing:

Del Rey Oaks

Citizen's Airport Study
Group

League of Women Voters

Monterey Peninsula Airmen's
Association

City of Carmel

Council of Monterey Bay, Inc.
Alternate Member:

G. Vance Biddle, Del Monte
Properties
 P.O. Box 567, Pebble Beach, Ca.
 624-3811

Sand City

Citizen's Advisory Group - Roster

Members

Medwin, Dr. Herman
4021 Sunridge Road
Pebble Beach, California 93953
624-1775, Res.
(Replaced by Dawn Cope)

Rudolph, Lou
801 Lighthouse Avenue
Monterey, California 93940
375-4173, Off.

Smith, Mr. Sherman
1955 Grandview Avenue
Seaside, California
394-2518

Turrentine, Daniel B.
1032 Lighthouse Avenue
Pacific Grove, California 93950
375-6043, Off.

Tyler, Dale
444 Dela Vina, K-2
Monterey, California 93940
373-3782, Res.

Yuckert, Leo, Chief
Monterey Control Tower
Monterey Peninsula Airport
Monterey, California 93940
375-1211, Off.
1-484-1830, Res.

Representing:

Sierra Club - Ventana
Chapter

Chamber of Commerce
Monterey Peninsula

City of Seaside

Pacific Grove

City of Monterey

Federal Aviation
Administration

MONTEREY PENINSULA AIRPORT DISTRICT
NORTH SIDE BUSINESS ESTABLISHMENTS

1. E-Z Go Car Company
2. Arbor Tree Surgery
3. Leo Diner Films, Inc.
4. ASK Heating & Sheet Metal Company
5. Lone Toy Tree Company
6. Wurzmann's of Monterey
7. Carfor Imports, Inc.
8. Inquisitive Eye
9. Dual Dandy Feeder Company
10. Air Museum
11. Navy Flying Club
12. Fire Department
13. American Auto Works
14. CTB-McGraw Hill
15. Auto Gallery Painting
16. Allen Electronic Company
17. Evers Refrigeration Company
18. Ramsey Antique Autos
19. Mission Novelty Company
20. Civil Air Patrol

Effective as of 12 March 1973

LIST OF REFERENCES

- [1] Alfantry-Alexander, M., editor, Analysis for Planning Programming Budgeting, papers presented at The Second Cost Effectiveness Symposium sponsored by the Washington Operations Research Council, 174 p.
- [2] Department of Transportation, Federal Aviation Administration, AC 150/5070-6, February 1971, 78 p.
- [3] Fort, D. M., Systems Analysis as an Aid in Air Transportation Planning, a Rand paper, presented at a National Transportation Symposium, San Francisco, California, 5 May 1966.
- [4] Monterey City Planning Commission, Monterey, California, A Circulation Study of the Monterey Area, October 1969, 70 p.
- [5] O'Leary, R. N., Petersen, K. and Reed, G., Recommendations and Suggestions for Areas of Study for a Master Plan for Monterey Peninsula Airport District, 4 December 1972, 15 p.
- [6] Rand Corporation, Program Budgeting, by D. Novick, 1972.
- [7] United Air Lines in conjunction with other Airlines serving the Monterey Peninsula, Monterey Master Plan Summary Report, 15 August 1968, revised 9 June 1969, 23 p.
- [8] U.S. Department of Housing and Urban Development, Noise Assessment Guidelines, Schultz and McMahon, August 1971, 20 p.
- [9] University of Washington, Seattle, Washington, Regional Airport Planning: A Systematic Model, Occasional Paper Number 1, by R. D. Shinn, May 1970.

INITIAL DISTRIBUTION LIST

	No. Copies
1. Defense Documentation Center Cameron Station Alexandria, Virginia 22314	2
2. Library, Code 0212 Naval Postgraduate School Monterey, California 93940	2
3. Chief of Naval Personnel Pers 1b Department of the Navy Washington, D. C. 20370	1
4. Naval Postgraduate School Department of Operations Research and Administrative Sciences Monterey, California 93940	1
5. Associate Professor M. G. Sovereign, Thesis Advisor Code 55Zo Naval Postgraduate School Monterey, California 93940	2
6. Monterey Peninsula Airport District P.O. Box 550 Monterey, California 93940	1
7. LT Gordon Thomas Reed, USN (student) 2020 Lake Street Holland, Michigan 49423	1

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

ORIGINATING ACTIVITY (Corporate author)

Naval Postgraduate School
Monterey, California 93940

2a. REPORT SECURITY CLASSIFICATION

Unclassified

2b. GROUP

REPORT TITLE

PRELIMINARY AIRPORT MASTER PLANNING FOR THE MONTEREY PENINSULA AIRPORT DISTRICT

ESCRIPTIVE NOTES (Type of report and Inclusive dates)

Master's Thesis; March 1973

AUTHOR(S) (First name, middle initial, last name)

Gordon Thomas Reed

REPORT DATE

March 1973

7a. TOTAL NO. OF PAGES

81

7b. NO. OF REFS

9

CONTRACT OR GRANT NO.

PROJECT NO.

9a. ORIGINATOR'S REPORT NUMBER(S)

9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

DISTRIBUTION STATEMENT

Approved for public release; distribution unlimited

SUPPLEMENTARY NOTES

12. SPONSORING MILITARY ACTIVITY

Naval Postgraduate School
Monterey, California 93940

ABSTRACT

The thesis presents a systematic preliminary airport master planning process for the Monterey Peninsula Airport District. Federal Aviation Administration airport master planning is explained and examined. The history, current operations and organizations of the Monterey Peninsula Airport District are examined through research and personal interviews. Specific problems are identified along with the factors that must be evaluated to solve these problems. Specific recommendations for further projects are listed in detail.

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
AIRPORT MASTER PLANNING						
AIRPORT PLANNING						
AIRPORT MASTER PLANNING PROCESS						
MONTEREY PENINSULA AIRPORT DISTRICT						



22 August 1974 (Interlibrary
Loan - Pacific Grove Public Library)
Library) MAY 20 S 12476
MAY 20 S 12476
MAY 20 S 12476

Thesis

143256

R268 Reed

c.1 Preliminary airport
master planning for the
Monterey Peninsula Air-
port District.

22 August 1974 (Interlibrary
Loan - Pacific Grove Public Library)
Library) MAY 20 S 12476
MAY 20 S 12476
MAY 20 S 12476

Thesis

143256

R268 Reed

c.1 Preliminary airport
master planning for the
Monterey Peninsula Air-
port District.

thesR268
Preliminary airport master planning for



3 2768 001 01285 9
DUDLEY KNOX LIBRARY

